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Appraisal Form for City Health Work

Ventilation Law Changes—*Greenburg*

Mental Hygiene—*Truitt*

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TENDENCIES IN PUBLIC HEALTH ADMINISTRATION*

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SO RAPID HAS been the development of social service within the last 10 years and so varied are the channels through which this service has been directed to the public needs, that the health administrator has perhaps felt like Jack, whose mother threw those beans away, and found next morning that they had grown sky high. Whether the health administrator can climb by their help to unknown and wider fields of conquest, is a debatable point as yet. Certain it is that the vision of health administration has been considerably broadened by the results of the many valuable surveys and demonstrations carried on by endowed institutes and foundations, without whose help and support the solution of many problems of administration would remain unattempted.

Some of the more enthusiastic advocates of purely social health service would apparently encourage the city health department to enter nothing but social activities and in all other respects make the health officer "a switchboard official," or one who steers into other municipal channels sanitary work which was formerly considered a basic and elementary duty of earlier régimes. Others equally as enthusiastic would convert all health departments into auxiliaries of baby welfare and prenatal stations, keeping in the department only as another activity, the supervision of epidemic diseases. It thus comes about that many of our older administrative functions are being permeated by these new social trends so that the health administrator may be forgiven if he feels that the old ideals are becoming somewhat dimmed and that new and unfamiliar signs are being seen upon the crossroads.

With the increasing spread of knowledge and education, however, health departments must be prepared to shoulder new burdens of responsibility not only in the prevention of disease but in the maintenance of health. New efforts must be made to come into closer touch with other city activities and the work of volunteer health agencies.

Who does not realize, with some prickings of conscience among a few of the older health administrators, the unnatural divorce of the public school from the health department, as a result of the refusal of such departments to carry on medical inspection of school children. Some way must be found to remove this isolation, to bridge this gap, for the future of health education is in the main a school problem. Health departments are vitally interested in the provision of adequate playgrounds, of swimming pools and baths, and play streets, and yet how seldom can their influence be felt in these ways.

* Read at the First General Session of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 19, 1925.

The care of the city poor in the homes and almshouse is inherently a health problem and yet in nearly every city government it is the work of another bureau.

How many real health problems are at our elbows, forgotten, neglected, or even unseen by those who are always on the *qui vive* for something new in health activities? How few health departments concern themselves with sweat shops, or home industries with lodging houses, with the sanitary condition of factories and the proper hygiene of the workers? How little legislation exists permitting health departments to supervise tenement buildings and control the type of construction, or to take an active part in city planning or zoning, or the suppression of the sale of quack medicines and misleading adverts of proprietary articles claiming to cure every human ailment? These are types of health department activities, generally going begging, or which are indifferently covered by other agencies in which health preservation is a side issue. How far shall the health administrator go in assuming the new social activities so alluringly displayed, and what shall he consider superflous work which he may be able to abandon or unload upon another city department?

Among many conflicting themes as to what are essential and what unimportant, there must be a middle course to be steered which will combine progress with safety in health administration. Although many members of this section have, no doubt, "come from Missouri," few are so "hard boiled" as to refuse to welcome sane exponents of improvement in administration who will not seek to promote new fields of endeavor by disparaging well tried and sound principles of sanitation and public hygiene. The administration of public health to-day is perhaps at the crossroads of change and the Public Health Administration Section is in need of sane yet progressive thinking and wise leadership.

"STOP, LOOK AND LISTEN" IN HEALTH ADMINISTRATION

In business the annual inventory serves the useful purpose of finding what particular line is loading up the shelves and whether it is worth while to continue the stocking of any particular commodity. It is a hopeful sign, therefore, that health departments should ask for an opportunity of "checking up" activities by means of the Appraisal Form recently adopted by the American Public Health Association.

This "check up" is presumably in tentative form only and may be liable to considerable alteration from time to time. The making of such a score card must, of course, reflect very much the personal opinion of the members of the committee in charge, inasmuch as there is no yard stick or standard whereby any of us can set a proper value upon the various activities of municipal health departments. Opportunity will, no doubt, be given for the health administrator to read and carefully consider the relative values assigned to the various branches of department work.

The difficulties in setting even an approximate value upon separate health activities is immense. How shall we measure our efforts in tuberculosis control when the disease is so much the product of housing, of special trades, of economic influences and even of nationality and race? Again in infant mortality so much is dependent upon a clean and safe milk supply, upon the breast feeding of infants, itself so much a matter of nationality and economic necessity. In contagious diseases the control of the patient is so small a matter as compared with the factors which predispose or bring about infection. How shall we properly set a value upon such factors and their control? The subject bristles with difficulties and must be approached with an unbiased mind and with a due recognition of the influences which may affect even distantly the health and welfare of the individual.

The adoption of the Appraisal Form should be optional with the health officers and any attitude of "hanging separately if not together," or of "being scored if he doesn't accept it and scored if he does," is to be deprecated. Only by frank and free discussion can such an Appraisal Form be made useful and comprehensive enough to measure the average city health administration and to meet any possible criticism that it is not the product of the health administrators themselves.

POLLUTED HARBORS AND COASTAL WATERS

The last few months of 1924 witnessed a mysterious outbreak of typhoid fever principally affecting New York and Chicago. These cities had pure and safe water supplies. Milk and food were efficiently supervised and investigation showed them to be above suspicion. The origin of the majority of the cases was traced to the eating of shellfish.

It was found after a survey that conditions of infection were present when tidal waters heavily infected with sewage were allowed to bathe shellfish beds and water set aside for floating purposes. The publicity following these outbreaks very nearly ruined the oyster industry and brought hardships and privation upon many thousands of workers in this business. At a conference in Washington in February, 1925, called by the Surgeon General of the U. S. Public Health Service, recommendations were made to Congress for a special appropriation to investigate and survey the oyster industry. The Appropriation Committee of the House assigned $57,600 to the U. S. Public Health Service for a sanitary investigation of the methods in use for the growth and marketing of all shellfish used for food. The pollution by sewage and other matters of harbor and coastal waters will have to be solved sooner or later or shellfish beds within reach of tidal contamination will have to be abandoned, and bathing facilities prohibited wherever water is found to be unsafe and dangerous to pleasure seekers.

HOSPITALIZATION AND SOME CONTAGIOUS DISEASES

The tendency for health administrators to place a high value upon hospitalization of cases of epidemic diseases is being somewhat discounted by recent observations in large cities especially where the case fatality can be shown to be unusually high at certain age periods. In a survey of the hospitalization of children covering 16,436 admissions to the Willard Parker Hospital, New York, in 1919-1925, Dr. Haven Emerson and Aleita Hopping found that the death rate among children suffering from scarlet fever, diphtheria and measles under two years of age was so high, especially in measles, that it was believed inadvisable to admit such patients to hospital care, even when the home conditions are unfavorable, if by visiting nurse service, passable conditions can be provided. The use of hospitals to cover up the sins of omission on the part of the parent or medical attendant was emphasized in the observation of the frequency of death occurring within the first 48 hours after admission, especially from diphtheria and from pneumonia in measles patients.

That hospitalization of such diseases as scarlet fever and diphtheria is of value in circumscribing the spread of epidemics is doubted by Brend, who illustrates the high prevalence of these in London, England, in 1914, irrespective of the fact that 90 per cent of the cases notified were received into isolation hospitals. A more promising future for the control of diphtheria and scarlet fever by administrative methods would appear to be by the more general application of the Schick and Dick tests in our institutions and public schools.

The mortality from heart disease is now the principal cause of death in our national, state, and municipal records. The reasons for this are probably many, but all obscure, and although programs for relief of sufferers from organic lesions will do much by providing clinics and hospital beds, there still remain the

underlying conditions, the reservoir, so to speak, that feeds us this line of crippled citizens. If rheumatism is a prime cause, then its prevalence must be sought for and combated as far as our publicity and education can carry it. The more effective follow-up of children recovering from epidemic diseases or discharged from isolation hospitals by a proper nursing force would perhaps bring many early cases of cardiac disease to the attention of parents and physicians. In Essex County, New Jersey, all patients discharged from the County Isolation Hospital are visited at home by nurses and the permanence of complications noted and parents advised as to their importance.

The deaths reported at Bayway, N. J., as a result of experimenting with tetraethyl lead, a highly poisonous chemical used for enriching gasoline for automobile engines, has drawn the attention of health administrators to the potential danger of fumes from this source upon public thoroughfares. The amounts of this chemical that might be present in the exhaust from motors using this fuel, however, has been shown to be so infinitesimal as to constitute little public hazard. But the addition of any poisonous substance to the noxious fumes already pervading our streets and roads will naturally arouse both curiosity and fear as to the effect upon the populace as a whole.

SANOCRYSIN FOR TUBERCULOSIS

The high hopes engendered by the news of a new remedy for tuberculosis found in certain salts of gold by Professor Moellgaard of Copenhagen have not been realized. The remedy is still under investigation in this country and abroad, but the results are as yet indeterminate and opinion must be reserved as to its possible value in this disease.

SECTION ON PUBLIC HEALTH ADMINISTRATION

This section as at present constituted is made up of Fellows and members of the Association (about 300 in number), whose work is concerned with the administration of public or private health agencies. It thus includes, and is indeed the proper section for the affiliation of, all municipal and state health officers or those who are interested in enforcing public health laws as well as those who are carrying on health activities by means of popular appeal, including many social and specialized agencies. The papers and discussions in the section have always maintained a high scientific level, combined with judicial constraint in conclusion and comment. This tradition must be continued if the Section on Public Health Administration is to fulfil its function as the forum before which, in the ultimate appeal, all public health activities must be presented for criticism and eventual approval.

THE ENGINEERING ASPECTS OF OYSTER POLLUTION*

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THE QUESTION of oyster pollution may be considered in two parts, namely, pollution due to conditions existing in the growing areas; and subsequent pollution due to insanitary handling, shucking, packing and shipping.

The study, control and correction of pollution in the growing and bedding areas are sanitary engineering problems, with such laboratory examinations as are generally required in any study involving water.

The control and correction of polluting influences entering into the handling of oysters subsequent to collection is a joint problem for the sanitary engineer, bacteriologist and public health officer, with the question of sanitation paramount.

Another problem which may be of considerable importance, and which is an engineering problem primarily, is that of artificial purification or sterilization by means of chlorine.

The control of sanitary conditions in the growing and bedding areas is perhaps the most important factor in the production of safe oysters, because it is in the waters in which they are grown or bedded that shellfish are most liable to be exposed to dangerous pollution. The protection of such areas presents a difficult problem, since the pollution of tidal waters, being subject to many and varying influences, is not easily controlled.

The determination as to the safety of oysters for human consumption heretofore has been based largely on the *B. coli* content of the shell liquor, expressed as a "score." The present standard score appears to have been based upon the assumption that the oyster, due to its life processes, tends to concentrate organisms that may be taken into its gill chamber, so that a greater *B. coli* content may be expected in the oyster than that of the water in which it is grown. If this were true we would expect the *B. coli* content of the shell liquor to be somewhat proportional to the *B. coli* content of the overlying water, and the score to give some indication of the character of this overlying water.

Studies of the relation of the *B. coli* content of the shell liquor to that of the overlying water have been very meager, and very little data bearing upon the subject are available. The results of the work carried on by the Public Health Service during the period 1914 to 1917,[1] and of a relatively small amount of work during the past summer, would lead one rather to doubt that the oyster score is indicative of the quality of the overlying water, and to suspect that other factors, particularly temperature, may be the determining ones in connection with the *B. coli* content of the shell liquor. It is also possible that there is some other organism that may be confused with *B. coli* which will account for excessive scores obtained at times in certain localities.

A definite basis upon which to fix an oyster score that would indicate within reasonable limits the safety of the oyster from the standpoint of freedom from

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* Read at the Joint Session on Oyster Sanitation of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 20, 1925.

possible gastrointestinal organisms appears to be lacking.

A study of the data available in *Public Health Bulletins* Nos. 74 and 86,[1] covering an investigation of tidal water pollution from New York to Virginia, indicates that where the *B. coli* content of the water ranged from negative in 10 c.c. to positive in 1 c.c., temperature conditions played an important part in so far as the oyster scores were concerned. The data obtained from this study also showed that the scores generally—94 per cent—fell within the present limit of 50 to the same extent when the oysters were taken from water having a *B. coli* content of 1 per c.c. as when taken from water negative in 10 c.c. We would not consider a water having a *B. coli* content of 1 per c.c. safe for drinking purposes, yet we have considered oysters grown in such water safe for human consumption, provided that the score was 50 or less.

So far as is known, there has been no work carried on to determine the relationship between oyster scores and water scores, where the methods have been comparable and where the oyster and bottom water samples have been collected at the same time, other than some experimental work carried on by the Public Health Service (Wells, Fisherman's Island)[2] in 1915, and by the Maryland State Board of Health and the Public Health Service during the past summer.

Wells, working experimentally with artificially polluted water, found that the number of *B. coli* in the shell liquor was high as compared to that in the water, where the *B. coli* concentration in the water was low; and that the ratio decreased as the concentration in the water increased. This was found to hold under actual conditions in the lower Chesapeake Bay during the past summer. The range of oyster scores was not affected by the *B. coli* content of the water, as scores from 0 to 500 were found in oysters taken from waters scoring 0.5 and less (0 to 10 *B. coli* per 100 c.c.) and from waters scoring 14 to 50 (280 to 1,000 *B. coli* per 100 c.c.).

With waters scoring from 0 to 0.5, averaging 0.19, the ratio of water to oyster score was 1 to 600; in waters scoring 1.4 to 5, averaging 2.59, the ratio was 1 to 44.8; and in waters scoring 14 to 50, averaging 35.7, the ratio was 1 to 7.6. The ratios obtained in the Maryland work corresponded to those just given. High scores in oysters were obtained by both laboratories in areas free from polluting influences, and for the present, at least, many of these high scores are unexplainable.

From the data available in *Public Health Bulletins* Nos. 74 and 86[1] the ratios would appear much lower, ranging from approximately 1 to 12 in waters having *B. coli* present in 10 c.c., to 1 to 0.6 in water having *B. coli* present in 0.1 c.c.

The data available would appear to indicate that the determination of the safety of oysters from a given area by a few bacteriological examinations of the shell liquor, without considering other data, is misleading and open to criticism.

Where oysters are grown in a water free from pollution of recent origin, as determined by surveys and bacteriological examinations, the oyster score would appear to be of minor importance, as the probability of the oyster's becoming infected is slight. This being the case, the determination of the probable safety of the oyster as a food will depend upon the condition of the water in which it is grown or bedded, and the problem becomes one of water pollution.

The determination of the probable safety of an area for the growing of oysters is somewhat more complicated than in the case of a water supply. Oysters are found only in tidal estuaries and bays that receive a certain amount of fresh water; hence they are subjected to possible polluting influences originating on fresh water streams as well as those which may arise directly upon the tidal areas. We have, therefore, not only the

question of stream pollution and purification, but also the more uncertain question of tides and currents, to deal with. A study of the pollution of a tidal area should be considered in two parts: first, the study of the stream above tidal influence; and, second, the study of the tidal estuary or bay.

Sanitary surveys of the sources and amounts of pollution entering the streams above tidal influence should be made, together with studies to determine the approximate dilution taking place under different conditions of stream flow and the approximate time interval elapsing between point of entry of the pollution and the area of tidal influence. Data thus secured will determine the approximate amount of pollution discharged from the stream to tidal water, which can be considered equivalent to a definite amount of sewage discharged at that point. This then becomes one source of pollution to the tidal area being studied.

Sanitary surveys should be made of the sources and amounts of pollution on the drainage area directly tributary to the tidal areas in which oysters are being grown or bedded, together with studies of dilution and action of tides and currents in respect to the shellfish growing areas. The action taking place in tidal areas is somewhat more complicated and variable than in streams, due to the tides and currents. Dilution may play a very minor part, due to vertical stratification and slow dispersion. Tides and currents in tidal estuaries are not constant, being affected by winds, the volume of inflowing fresh water and the like. The lag in tides and currents also produces conditions which tend to interfere greatly with estimates of time intervals and the movement of water over growing areas. This is particularly true where a considerable lag occurs on one side of an estuary as compared with the other side. Such conditions may produce islands of unpolluted water where pollution would be indicated. Bottom topography must also be given consideration, and its influence in determining direction of flow, limiting of dispersion, and barrier action studied. It is therefore necessary carefully to study areas which from a sanitary survey might appear questionable, giving proper consideration to all of the factors concerned. Movements of water, effects of dilution and conditions of pollution in areas within which shellfish are grown would seem best to be determined by the establishment of *B. coli* contours under different conditions of tides and winds. This can be done by cross sectioning the areas and determining the *B. coli* content of the surface and bottom water.

To summarize briefly, it would appear that the safety of an area for the growing or bedding of shellfish can be best determined by a sanitary survey of the tributary area to locate sources and amounts of pollution, estimates of time required for the pollution to pass from point of entry to the growing area, effects of dilution, the action of tides and currents under the varying conditions, and effect of bottom topography, together with the examination of oysters and bottom water samples collected simultaneously and under varying tidal conditions; and that the effects of dilution and movement of water can be best studied through *B. coli* determinations of surface and bottom samples so taken as to make possible the plotting of *B. coli* contours.

With the data thus obtained it should be possible to determine the probable safety of a growing or bedding area regardless of the score obtained from shellfish taken from the area, since the shellfish score is only one factor to be considered along with many others. It also becomes possible to determine the type and extent of corrective measures necessary for the protection of any given area.

The handling, shucking and packing of oysters would appear somewhat analogous to the handling of milk, but considerably more open to polluting influences, since the oysters come in contact with the hands during shucking and are

washed before they are packed. As oyster liquor is stated to be an excellent bacteriological medium, the same precautions against undue contamination are indicated as in the case of milk. Matters of general sanitation, water supply and equipment enter very largely into the problem of control.

While offering no particular complications, this phase of the shellfish control problem is an important one requiring considerable attention, since in the past little or no control has been exercised over oyster and clam shucking and the methods followed have been to a considerable extent insanitary.

There are many growing areas which are suitable for oyster culture, advantageously located for gathering and marketing, but which are receiving sufficient pollution to restrict their usefulness. Methods by which oysters or clams from such of these areas as are not grossly polluted may be treated and made marketable should receive careful consideration. Purification of oysters by allowing them to cleanse themselves in water treated with chlorine would appear to offer the solution to this phase of the problem. The work of Wells [3] in 1914 and 1915, of Wells and others [4] in 1920, and that carried on in the commercial plant installed by Sprague and Doughty at Inwood, N. Y.[5] (now abandoned), would indicate that this method is both feasible and practicable within certain limits. Before this process definitely can be recommended, however, it is believed that more work on a commercial scale, involving other methods of chlorination, is necessary.

In this connection, it may be stated that at least two of the larger oyster companies, one dealing in shell oysters and the other in shucked oysters, are arranging to carry on experiments during the present season.

In any development of chlorination with respect to oyster purification it should be borne in mind that such treatment is not a substitute for sanitary control over growing areas or for cleanliness in handling, but simply an additional safeguard against accidental pollution.

Oysters grown in one state are often shipped to other producing states for shucking and distribution; hence any one state may be limited in the control it may exercise over shipments from its boundaries. It seems necessary, therefore, that uniform methods and regulations be adopted by each producing state if the product as a whole is properly to be safeguarded.

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DISCUSSION BY WILLIAM FIRTH WELLS, FELLOW A.P.H.A.

Mr. Tarbett has outlined a splendid plan for the survey of coastal waters. A program to conserve the quality of waters on which directly depends an industry producing 70,000 tons of food per annum, at a cost to the consumer of fifty million dollars, is amply justified. The remarkable iso-coli contour maps prepared by Carmelia and Pincus, in connection with the study of Jamaica Bay by the U. S. Public Health Service in 1916, indicate the usefulness of such charts to those concerned in the regulation of coastal pollution. Much can be done by the systematic location of sampling points, and standardization of methods of examination, to utilize data collected by the various states.

Valuable as may be a survey of this sort, we should not place undue emphasis upon this phase of the problem. Independently it falls far short of insuring the public and the industry against such happenings as have occurred in the past. None of the classic American examples, Wesleyan, Atlantic City, Lawrence,

Goshen, and Tilghman's Island, have been attributed to pollution acquired by shellfish on their natural beds. Such contamination as was accused of causing the trouble entered from intimate contact, either by floating in grossly contaminated creeks, or handling in the shucking house by infected persons. This is in harmony with Houston's dictum regarding water—that danger from equal degrees of pollution is greater where it is recent in character, and also conforms with experience in the handling of other foods.

Valuable as may be the survey, it was powerless to prevent last winter's disaster. The indictment of oysters from beds bearing the highest certificates of purity, issued by the most competent authorities, reveals to the industry the futility of such certification in a crisis, and raises for the sanitarian a serious problem.

Unless public health can define the conditions of shellfish production which will guarantee adequate security to the public and the industry, it has failed in the grave responsibility issuing from its unlimited authority. Naturally, the burden will fall largely upon the public health engineer, following the precedent established by the sanitary improvement of water and milk supplies. Much which has been learned in these fields can be applied directly, but it must not be forgotten that oysters differ radically from either product, and introduce problems peculiar to themselves.

Mr. Tarbett has fully covered the question of water pollution problems. We may add, however, that salinity, and feeding conditions required for the growth of oysters can only be produced by the admixture of fresh with tremendous volumes of salt water by natural tidal action, thereby diffusing polluting substances in such a manner as to cause slight but rather generalized contamination. Unlike rivers or lakes, the foci of pollution in tidal waters are dispersed by the ebb and flow of the tide, together with winds and currents which may carry polluting substances long distances and proportionately dilute them. This is clearly shown in Jamaica Bay, where despite the discharge of 50,000,000 gallons of sewage per day, there are found large areas where *B. coli* are generally absent in 1 c.c., and in Raritan Bay most areas still come in this class.

The waters in which shellfish are grown to-day may be compared roughly to drinking water before the general application of purification processes. Twenty-five years ago, waters which showed less than half of 1 c.c. samples to contain *B. coli* were considered acceptable, and it has been only since the art of water purification has become firmly established that the standard has been raised until the same criterion applies to 10 c.c. quantities.

In so far as oysters are an organic food product, many lessons can be derived from the milk industry, where formerly production was left to the judgment of the farmer and filth and adulteration reigned unchallenged under cover of the opacity of the medium. Gradually the public was awakened by sanitarians to the need of clean milk; former slovenly methods of dairy practice were condemned, and a new standard was raised. This at first came as a distinct hardship to the industry, but gradually adjustments were made until the improved conditions became as natural as were those of 25 years ago which we could not tolerate to-day.

Sanitation has not stopped here. However clean may be the conditions under which milk is produced, possibilities always exist for the accidental infection of milk in the process of handling, and here science has devised a simple and effective way of pasteurizing milk to remove the last faint vestige of suspicion.

Likewise the oyster industry shared the general attack of sanitarians, and consequently, former practices of taking up clean oysters and placing them in rivers receiving the sewage of large cities in order to float or plump them, have been abandoned. Contaminated grounds which formerly were tolerated for maturing oysters have been condemned, and as a result it can be generally stated that oysters to-day compare in safety to milk before the adoption of pasteurization.

Whereas oysters generally may be considered free from contamination, there are practically no conditions under which they are naturally produced where contamination is not possible. The waters over the beds are open to navigation, and not absolutely free of access to accidental or occasional pollution. While generally these possibilities may be considered negligible, still they are possible, and while such a condition exists, sanitarians must always give their endorsement with reservations. Until measures similar to those used in the purification of water and the pasteurization of milk are utilized in the oyster industry, the public is bound to lack the satisfaction in this sensitive product which it should rightfully have.

Although the analogy to the public health problems of water and milk may serve to guide

the progress of the oyster industry, the technical development of special methods of insuring the highest quality of the product requires an intimate knowledge of the differences arising from the nature of shellfish as living animals. Without a full knowledge of the biology of the oyster, its anatomy, physiology, feeding habits, and the biochemical reactions of its tissues, it will be impossible to direct the forces and activities of nature to the accomplishment of this end. The degree and conditions under which materials are filtered from the water, their path and rate of progress through the animal, the fate of bacteria within shellfish or their ultimate elimination, and the factors controlling this mechanism, constitute the data which are just as essential to the biological engineer as the formulae of hydraulics and the chemical reactions in the design of a filter plant.

It is here that confusion arises, to which Mr. Tarbett bears witness, and this confusion is apparent in many discussions of shellfish pollution. The vexed question why oysters do not always test the same as the water in which they are growing cannot be evaded by neglecting the oyster and focusing attention on the water. Until evidence is rendered to the contrary, the burden of proof still rests upon the oyster to account for the *B. coli* in its possession.

In 1914 and 1915 the U. S. Public Health Service conducted a biological experiment station at Fisherman's Island, Va., which Dr. Cumming entrusted to my immediate charge, and here the attempt was made to get sufficiently acquainted with an oyster in his natural home to obtain an answer to some of these questions. The primary effort throughout the work was to observe the oyster as it lives, for no elaboration of laboratory technique will compensate for abnormal conditions, nor will bacteriological skill deceive an oyster. In 1916 Surgeon H. E. Hasseltine of the Service was placed in charge of the station and we carefully confirmed the critical experiments and extended the scope of the study. I am indebted to Dr. Cumming for the courtesy of permitting a summary of the conclusions of the investigation to be published.

CONCLUSIONS REACHED BY THE U. S. PUBLIC HEALTH SERVICE IN EXPERIMENTS AT FISHERMAN'S ISLAND

1. From a large number of observations upon inoculations with liquid broth cultures of *B. coli* (and fewer with *B. typhosus*), during all seasons of the year, the following facts have been developed relating to "free" organisms.

(a) *B. coli* ordinarily disappear from sea water at an approximate rate of 50 per hundred per 24 hours in the winter months, which rate may rise to 80 in the summer. This is nearly twice as high as that observed in fresh water.

(b) While these conclusions previously made by us, as to the death or disappearance rate of *B. coli* in sea water under ordinary conditions, were confirmed, it was made evident by data collected that there may coexist conditions of temperature, food and environments, under which the increase and death rate of organisms may be so balanced that some organisms may be found present several weeks after inoculation has been made.

2. It is probable that *B. typhosus* has a much shorter life than *B. coli* in sea water.

3. The quantity of water filtered through an oyster's gills at moderate temperatures averaged greater than 2 gallons per hour.

4. Particles entering the shells of feeding oysters are passed to the stomach in less than 30 minutes, and ejected with feces in less than 5 hours. When the shells are closed the feces continue to pass into the cloacal chamber.

5. At least a large proportion of *B. coli* and *B. typhosus* ingested pass unaffected through the oyster.

6. Oysters, amplifying changes in surrounding water, undergo "waves" of pollution, which by lagging behind such changes, cause considerable variation between bacterial content of the oyster and that of the surrounding water at any given time. The individuality of oysters also causes them to vary among themselves.

7. The *B. coli* content of the oyster liquor was just about that of the water for the greater part of the year.

8. The *B. coli* content of the oyster liquor became considerably greater than that of the surrounding water when spawning occurred in the hottest part of August, at which time oysters either accumulated solid materials more rapidly, or *B. coli* (and possibly *B. typhosus*) multiplied within the shell, or both, bringing about a condition of the oyster which is more

dangerous, for a given degree of water pollution, than at any other period of the year.

9. The ratio of *B. coli* content of liquor to that of surrounding water is approximate unity with gross pollution of the latter, and increases as the intensity of the pollution of the water decreases.

10. Only a small proportion of the "free" *B. coli* are retained from water being passed through oysters' gills.

Oysters accumulate detritus, including disintegrated sewage particles, and thus render turbid water clear, except during low temperatures, when such materials are excluded together with any organisms which may be attached thereto; so that at about 6° to 7° C., the maximum sized particles capable of passing through the partially closed shell are comparable in size with "free" bacteria, which we have shown are not retained to any great extent upon the gills of the oysters. Accumulation of pollution is, therefore, reduced to practical exclusion at temperatures below 6° C.

11. The *B. coli* content of the liquor fell slightly below that of the water during the "hibernating" months, but exclusion of bacteria was never complete. Soluble dyes were also found to enter the oyster at hibernating temperatures. There was a distinct lag in changes in the content of oyster liquor following temperature and other changes in the water.

The phenomenon of "hibernation" described by Gorham and others was demonstrated experimentally by inoculating tanks with finely divided agar suspensions incorporating bacteria, and was visually observed when the agar was colored by carmine. However, it failed to manifest itself appreciably with free *B. coli* inoculations. The phenomenon may be explained by the fact that in nature the organisms are usually associated with particles of solid matter. It is evident, therefore, that the physical condition of polluting material, as well as the condition of the oyster, affects the pollution of the oyster.

12. Observations during both years, at the laboratory and in the field, show that the effect of hibernation in excluding pollution is sufficient to make reasonably safe, during actual "hibernation periods" many oysters which, during periods of physiological activity, would be unsafe because of contained pollution. In view of the fact that exclusion of infectious organisms is not complete during cold weather, we believe that oysters from grossly polluted areas are not made entirely safe by hibernation alone; such oysters should not be used as raw food unless they are purified by transfer to nonpolluted waters or by the use of calcium hypochlorite. Hibernation alone cannot be relied upon to insure the sanitary safety of oysters from grossly polluted beds.

13. At feeding temperatures, the gastrointestinal tract of oysters ordinarily contains the greater part of pollution, while at low temperatures the liquor and surfaces may be relatively the more contaminated; exception may occur when coarser sewage particles have been retained in the gill chamber and diverted by the palps but have not been ejected by the sudden closing of the shells.

14. In the warmest month, when oysters were spawning, the number of *B. coli* passed in feces seemed to exceed the number calculated to have been present in the oyster; which fact, together with the increased bacterial content of the liquor, indicates that growth may occur in the gastrointestinal tract at the temperatures then prevailing (25° to 30° C.).

15. Polluted oysters, transferred to pure water, eliminate almost all of the contained organisms within a few hours at feeding temperatures, and within a few days in the winter.

16. It was found possible to purify polluted oysters by treatment in basins with water continuously or repeatedly disinfected with calcium hypochlorite.

It has been demonstrated that it is practicable to purify polluted oysters on a commercial scale, either by removing them to nonpolluted waters when such waters are conveniently located, or by immersing them in waters which have been disinfected by the use of chlorine from calcium hypochlorite. Further, it has been shown that there is no change in the taste, appearance, or chemical constituents of oysters so treated, and particularly that no free chlorine can be found, even by delicate tests made an hour or so after purification by this method.

17. Observations have shown that the cooking of oysters as ordinarily done, destroys typhoid organisms even in heavily infected shellfish.

18. Observations, continued throughout different seasons, show marked seasonal variations in the *B. coli* content of feces of an individual human being.

19. Lactose splitting, spore forming, anaerobic bacteria were found, commonly in the water, and abundantly in the mud from flats remote from pollution, and in normal oyster feces.

the progress of the oyster industry, the technical development of special methods of insuring the highest quality of the product requires an intimate knowledge of the differences arising from the nature of shellfish as living animals. Without a full knowledge of the biology of the oyster, its anatomy, physiology, feeding habits, and the biochemical reactions of its tissues, it will be impossible to direct the forces and activities of nature to the accomplishment of this end. The degree and conditions under which materials are filtered from the water, their path and rate of progress through the animal, the fate of bacteria within shellfish or their ultimate elimination, and the factors controlling this mechanism, constitute the data which are just as essential to the biological engineer as the formulae of hydraulics and the chemical reactions in the design of a filter plant.

It is here that confusion arises, to which Mr. Tarbett bears witness, and this confusion is apparent in many discussions of shellfish pollution. The vexed question why oysters do not always test the same as the water in which they are growing cannot be evaded by neglecting the oyster and focusing attention on the water. Until evidence is rendered to the contrary, the burden of proof still rests upon the oyster to account for the *B. coli* in its possession.

In 1914 and 1915 the U. S. Public Health Service conducted a biological experiment station at Fisherman's Island, Va., which Dr. Cumming entrusted to my immediate charge, and here the attempt was made to get sufficiently acquainted with an oyster in his natural home to obtain an answer to some of these questions. The primary effort throughout the work was to observe the oyster as it lives, for no elaboration of laboratory technique will compensate for abnormal conditions, nor will bacteriological skill deceive an oyster. In 1916 Surgeon H. E. Hasseltine of the Service was placed in charge of the station and we carefully confirmed the critical experiments and extended the scope of the study. I am indebted to Dr. Cumming for the courtesy of permitting a summary of the conclusions of the investigation to be published.

CONCLUSIONS REACHED BY THE U. S. PUBLIC HEALTH SERVICE IN EXPERIMENTS AT FISHERMAN'S ISLAND

1. From a large number of observations upon inoculations with liquid broth cultures of *B. coli* (and fewer with *B. typhosus*), during all seasons of the year, the following facts have been developed relating to "free" organisms.

(a) *B. coli* ordinarily disappear from sea water at an approximate rate of 50 per hundred per 24 hours in the winter months, which rate may rise to 80 in the summer. This is nearly twice as high as that observed in fresh water.

(b) While these conclusions previously made by us, as to the death or disappearance rate of *B. coli* in sea water under ordinary conditions, were confirmed, it was made evident by data collected that there may coexist conditions of temperature, food and environments, under which the increase and death rate of organisms may be so balanced that some organisms may be found present several weeks after inoculation has been made.

2. It is probable that *B. typhosus* has a much shorter life than *B. coli* in sea water.

3. The quantity of water filtered through an oyster's gills at moderate temperatures averaged greater than 2 gallons per hour.

4. Particles entering the shells of feeding oysters are passed to the stomach in less than 30 minutes, and ejected with feces in less than 5 hours. When the shells are closed the feces continue to pass into the cloacal chamber.

5. At least a large proportion of *B. coli* and *B. typhosus* ingested pass unaffected through the oyster.

6. Oysters, amplifying changes in surrounding water, undergo "waves" of pollution, which by lagging behind such changes, cause considerable variation between bacterial content of the oyster and that of the surrounding water at any given time. The individuality of oysters also causes them to vary among themselves.

7. The *B. coli* content of the oyster liquor was just about that of the water for the greater part of the year.

8. The *B. coli* content of the oyster liquor became considerably greater than that of the surrounding water when spawning occurred in the hottest part of August, at which time oysters either accumulated solid materials more rapidly, or *B. coli* (and possibly *B. typhosus*) multiplied within the shell, or both, bringing about a condition of the oyster which is more

dangerous, for a given degree of water pollution, than at any other period of the year.

9. The ratio of *B. coli* content of liquor to that of surrounding water is approximate unity with gross pollution of the latter, and increases as the intensity of the pollution of the water decreases.

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SUMMARY

There is not space to dwell on the significance of these findings, beyond a brief discussion of the continued development of the method referred to by Mr. Tarbett, whereby shellfish eliminate polluting substances by their natural function in artificially sterilized sea water. The work is described in his references and the Tenth, Twelfth, and Fourteenth Annual reports of the New York State Conservation Commission. Further data exists in the unpublished records of the U. S. Public Health Service, the U. S. Bureau of Chemistry, the state health departments of New York and New Jersey, and the city health departments of New York and Newark, who have each investigated the method.

The accumulation of evidence from these demonstrations encouraged G. Wilbur Doughty, upon the closure of Jamaica Bay, to undertake the development of a commercial plant. After 2 years' preliminary operation a certificate was issued in 1922 by the New York State Conservation Commission. For the first time, therefore, the product instead of the beds was certified. Positive evidence that possible contamination had been removed was substituted for the negative evidence that failure to discover *B. coli* indicated the absence of infection.

For three seasons, certified oysters have been shipped interstate, and sold in the Newark market, subject to certification by the State of New York and the approval of the U. S. Bureau of Chemistry and the health departments of the State of New Jersey and the City of Newark. During this interval, when 50,000 bushels of oysters have been eaten in Newark, the typhoid rate has been 10 per cent below the normal expectancy, while in that interval the sister city of New York, relying solely on inspection, has been visited with the severest typhoid epidemic ever attributed to oysters.

In the light of this record, and a personal knowledge of the circumstances attending the disposal of the property on which the plant was located, I would criticize the propriety of the term "abandoned" as applied by Mr. Tarbett.

Your attention is called to the report of the sub-committee appointed by the Surgeon General to investigate the subject of oyster purification, in accordance with a resolution adopted at the Washington conference.

In conclusion, I should like to quote from the last report of the Ministry of Agriculture and Fisheries of Great Britain, the attitude of the Ministry of Health toward a similar method of purifying shellfish, which has been in commercial use since 1916:

"A system of cleaning in tanks has been evolved. It is claimed that certain results can be achieved by it, such claims being based on the fact that exhaustive bacteriological tests carried out over a period of nearly ten years, under all possible conditions, have established this."

NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS

At the annual meeting in New York City, November 30 to December 5, the following resolution was adopted:

WHEREAS, recent studies of health conditions among our 300,000 American Indian wards disclose an appalling prevalence of trachoma with its inevitable damage of vision and ultimate sequelae of blindness, and

WHEREAS, reports recently made public by governmental agencies charged with guardianship of these 300,000 Indian wards, confirmed also by many sincere friends of the American Indians, show that provisions are now made for a totally inadequate staff of highly trained persons to cope with the ravages of trachoma in the 30,000 cases reported by the Indian Agents, and

WHEREAS, the Secretary of the Interior and Commissioner of Indian Affairs are greatly handicapped in their sincere efforts in behalf of the health and welfare of these 30,000 afflicted Indians, both by shortage of skilled personnel and shortage of funds, therefore, be it

RESOLVED, That the National Committee for the Prevention of Blindness in annual meeting assembled, and representing upward of 15,000 persons, who by annual contributions in memberships or by donations, support every hopeful effort in lessening blindness, respectfully urge upon Congress such increased financial support and additional legislation as may be required to more quickly alleviate the suffering and ravages of trachoma and minimize its incidence and to better coöperate with all social agencies in a position to help with this promising work so well begun by the Secretary of the Interior and his Commissioner of Indian Affairs.

NECESSITY FOR CHANGES IN THE VENTILATION LAWS OF THE UNITED STATES*

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THE ATMOSPHERE has long been considered by man as the source of both good and evil. In the Middle Ages plagues of various kinds were supposed to have been transmitted through the air and miasms and malaria as names bear evidence of the ideas of man regarding the part played by the atmosphere in the causation of disease.

The rise of chemistry in the 17th century and the culmination and crystallization, during the last quarter of the 18th century, of the knowledge of the chemical nature of the air by the work of Lavoisier, served as a true beginning for the study of the physiology of respiration, and with it the subject of ventilation.

Lavoisier clearly showed the relation between oxygen and carbon dioxide in respiration and, realizing the production of large amounts of carbon dioxide by the process of respiration, he concluded that the malaise experienced by people in large assemblies is not due to the diminution of the proportion of oxygen present but to the action, more or less prolonged, of carbon dioxide in amounts insufficient to cause asphyxiation.

Little of historical note in the field of ventilation was published during the next 75 years but in the year 1862–3, Max von Pettenkofer published the results of studies which indicated that neither the increase of carbon dioxide, the decrease of oxygen, the alteration of the temperature, or the humidity had any effect on the well-being of persons in poorly ventilated rooms; but rather that the continuous respiration of organic poisons exhaled and emanating from the human body served to continually poison the occupants of rooms. Pettenkofer further suggested that not being able to measure the quantity of these subtle poisons in the atmosphere, the carbon dioxide content of the air might well be used as an index of their concentration.

The work of Pettenkofer instead of simplifying the situation served to render it more complex, and during the following 25 years both the carbon dioxide theory and the organic toxin theory were put forth by their proponents as being the true reason for the necessity for adequate ventilation. Leeds[1] in 1871 pointed out that the evil effects of bad ventilation were caused by the accumulation of carbon dioxide, while Billings[2] in 1884 exonerated carbon dioxide and remarked on the presence of this gas in high concentration in certain industrial atmospheres without fatalities. Speaking of carbon dioxide he said:

> What, then, is the importance of this gas in relation to questions of ventilation? And why do sanitarians lay so much stress upon the results of chemical tests of air with reference to this substance, and on what may seem very small variations in the proportions in which it is present?
>
> It is because carbon dioxide is usually found in very bad company, and that variations in its amount to the extent of three or four parts in ten thousand indicate corresponding variations in the amount of those gases, vapors and suspended particles which are really offensive and dangerous and also because we have tests by which we can, with comparative ease and certainty, determine the variations in carbonic acid,

* Prepared by direction of the Surgeon General, U. S. Public Health Service. Read at the Joint Session of the Industrial Hygiene and Sanitary Engineering Sections of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 19, 1925.

while we have no such tests of recognized practical utility for the really dangerous impurities.

The end result of the teachings of both schools of workers was judged by a common criterion, the presence of carbon dioxide not exceeding certain specified limits, a limit ranging between 6 and 10 parts per ten thousand of air and usually fixed at 6 or 7 parts.

The limitation of the concentration of carbon dioxide at once fixes the quantity of outdoor air that must be brought into a given room per hour, provided the number of occupants and the room volume are known. If the room volume is neglected, an exceedingly simple computation shows that for each person in a moderate state of activity it is necessary to introduce 2,000 cubic feet of air per hour (or somewhat over 30 cubic feet per minute) in order to maintain an atmosphere containing less than 6 parts of carbon dioxide per ten thousand.

The foregoing was the fundamental ventilation criterion devised by Pettenkofer, Billings, and Parkes and the one which served as a basis for the demand that 30 cubic feet of outdoor air be supplied each minute per room occupant in order to meet ventilation requirements. That this standard, supplied by the hygienists, was adopted by the engineer is evident by reference to the writings of the foremost ventilating engineers of this period. In a series of papers[3] published between 1888 and 1898, S. Homer Woodbridge, using the carbon dioxide criterion, urges the supply of 2,000 cubic feet of air per person per hour. A careful study of the literature of this period shows that on the advice of the ventilation experts these requirements began to be introduced into the rules and regulations of the school boards. For example, in *Connecticut School Document No. 12* (1896) one finds the following:

> The amount of air required per hour by each child in a state of comparative rest, is 2,000 cubic feet (older children require 2,500, and adults about 3,000).

The introduction of specific laws and regulations governing the ventilation of school houses and public buildings followed as the next logical step, the earliest being that of the state of Massachusetts in 1902, followed by New Jersey in 1903 and New York in 1904.

Because of the fact that in most public buildings little attention is paid to the problem of ventilation and moreover because it is exceedingly difficult to obtain definite information with regard to the installations in use and their operation, it is perhaps advisable to focus our attention on the problem of the ventilation of school buildings as an example of the problem in its broadest aspects.

STATE VENTILATION LAWS FOR SCHOOL BUILDINGS

The latest compilation of ventilation laws of the United States was published in 1917,[4] but recently two very valuable analyses have been published,[5] bringing the laws up to the present date.

In the table below, taken from the paper by Professor Winslow, all of the 48 states are arranged in the following groups: Group I includes those states having no law or state-wide regulation. Group II contains those states requiring ventilation but not specifying exactly how much except by the use of some general or vague term. Group III is composed of those states having specific laws and regulations governing this problem.

Table I clearly shows that of 48 states there are 17 having no laws or regulations (Group I), there are 7 (Group II) in which the requirements are general and somewhat vague and there are 24 states (Group III) which have specific laws or regulations governing the subject.

Of the 24 states in Group III, 20 require that an air supply of 30 cubic feet per person per minute be maintained. The 4 excepted states (Alabama, Ohio, Minnesota and Wisconsin) have provisions worded somewhat differently, but the Ohio law requiring six air changes

per hour is in effect the same as the 30 cubic feet per minute law. In Alabama and Minnesota the requirements are somewhat less rigorous, requiring 10–15 cubic feet per person per minute. The Wisconsin law is the most exacting and specific in force at this time. By the requirements of this code, means for positive ventilation of 2 cubic feet of air per minute per square foot of floor area must be provided and maintained and the use of gravity direct-indirect systems are specifically prohibited.

One peculiarity of many of the ventilation laws in force in those states having specific regulations is that the law has been applied to some schools and not others. According to McLure:[6]

> The laws and regulations on ventilation are so framed or administered that mechanical, or fan, ventilation is not compulsory for all schools in any one of these states.

Just what criterion has been applied so that certain schools may be permitted to do without such systems of ventilation while others have been compelled to use them has, so far as I am aware, never been disclosed by the advocates of these laws.

VENTILATION IN THE SCHOOLHOUSE

In the study previously referred to, Professor McLure[6] has obtained the detailed ventilation data and operation practice of schools in 96 cities (of 30,000 and more population), situated in 31 different states. In order that this information might represent the latest practice the data were obtained only for those buildings erected since January 1, 1918.

Of the 700 school buildings whose ventilation systems were described in answer to his questionnaire, McLure finds 73 per cent utilize one type or other of mechanical system; 47 per cent of the installations were fan supply and gravity exhaust systems and 24 per cent were fan supply and fan exhaust systems. In striking contrast with these figures, only 6 per cent of the buildings make use of window supply-gravity exhaust systems, the system which as we will see later is now regarded as one of the best methods of schoolroom ventilation. The analysis of the replies also showed that, of the schools constructed in cities located in states having no ventilation laws, 52.5 per cent used non-mechanical systems while 47.5 per cent used mechanical systems. In contrast with this McLure found that in the case of states having ventilation laws 13 per cent used non-mechanical, while 87 per cent used mechanical systems. It would appear from this analysis that in addition to the direct

TABLE I

STATUS OF LEGISLATION GOVERNING SCHOOL VENTILATION, AS OF JANUARY, 1925

State	Legal Provision: None	General	Specific
Alabama	..	..	R(E)
Arizona	..	R	...
Arkansas	..	R	...
California	X	..	...
Colorado	X	..	...
Connecticut	..	L	...
Delaware	..	L	...
Florida	..	..	R(H)
Georgia	X	..	...
Idaho	..	..	R(E)
Illinois	..	..	R(E)
Indiana	..	..	L
Iowa	X	..	...
Kansas	X	..	...
Kentucky	X	..	...
Louisiana	..	..	R(H)
Maine	..	..	R(E)
Maryland	X	..	...
Massachusetts	..	..	R(PS)
Michigan	..	..	R(E)
Minnesota	..	..	R(E)
Mississippi	X	..	...
Missouri	..	R	...
Montana	..	..	L
Nebraska	..	R	...
Nevada	X	..	...
New Hampshire	X	..	...
New Jersey	..	..	R(E)
New Mexico	..	R	...
New York	..	..	L
North Carolina	X	..	...
North Dakota	..	..	L
Ohio	..	..	R(I)
Oklahoma	..	..	L
Oregon	X	..	...
Pennsylvania	..	..	L
Rhode Island	X	..	...
South Carolina	X	..	...
South Dakota	..	..	L
Tennessee	X	..	...
Texas	..	..	L
Utah	..	..	R(E)
Vermont	..	..	R(H)
Virginia	..	..	L
Washington	X	..	...
West Virginia	..	..	R(H)
Wisconsin	..	..	R(I)
Wyoming	X	..	...
Total	17	7	24

L=Statutory provision.
R=Regulation of educational authorities (E), Health authorities (H), Industrial commission (I), or Department of Public Safety (PS).

compulsory influence of the law, for some other (and probably diverse) reasons, 113 schoolhouses in states having no compulsory law were equipped with mechanical ventilation systems.

The problem of ventilation is, during the cold months of the year, always complicated by the problem of heating. In fact, the use of the ventilating system is in many installations highly dependent upon the use of the system for heating. In 69 per cent of the cities referred to previously the ventilation system is used only during the heating season, while in only 31 per cent is the ventilation provided during the full school year. It seems hardly necessary to point out that so far as is known respired air is of uniform constitution throughout the year, and if 30 cubic feet of outdoor air per person per minute are necessary in winter this quantity should also be necessary in summer when the heating system is not in use. It would appear that ventilating systems are used very largely in order to transmit heat to the classrooms of the buildings and hence are really in these cases not primarily serving as a means of ventilation. And further, McLure found that the ventilation systems were only used regularly and continuously in 50 per cent of the buildings even during the heating season.

THE THERMAL THEORY

In 1883, Hermans first pointed out that the evil influence of poorly ventilated rooms is probably thermal and not chemical in nature. And in 1895 in their report, Billings, Mitchell and Bergey state that the discomfort produced by crowded, ill-ventilated rooms in persons not accustomed to them is not due to the excess of carbonic acid, nor to bacteria, nor, in most cases to dusts of any kind. The two great causes of such discomfort, though not the only ones, are excessive temperature and unpleasant odors. Such rooms as these referred to are generally overheated by the occupants, and at night, by the usual means of illumination.

In 1905, Flügge and his pupils at Breslau working on this problem finally put the thermal theory of ventilation on a firm experimental foundation. Persons were placed in a closed cabinet 3 cubic meters in content and shut in for 4 hours. Carbon dioxide rose as high as 1.5 per cent and so long as temperature and humidity were kept down the power to carry out ergographic and mental tests was not impaired.

Paul, one of Flügge's pupils, shut a man in a similar chamber for 4¾ hours and raised the temperature to 75° F., the humidity to 89 per cent, and the carbon dioxide to 1.2 per cent. People outside the cabinet breathing the cabinet air through a tube felt no discomfort but the subject in the cabinet became very uncomfortable immediately. This experiment was reversed, the subject in the cabinet breathing outside air supplied through a tube. He still continued to be uncomfortable and remained so until the cabinet temperature was reduced to 63° F. or until a circulating fan was used to produce air motion in the cabinet.

In 1907, Benedict and Milner carried out extensive investigations in this field. Seventeen subjects were kept in a cabinet for periods from 2 hours to 14 days. Carbon dioxide rose in one case to 231 parts per 10,000, but there was no discomfort whatever and no detectable disturbance of physiological function so long as the chamber was kept cool.

The thermal theory of the need for ventilation now became commonly accepted. The English Departmental Committee Report on Humidity and Ventilation of Cotton Weaving Sheds marked the complete acceptance of this theory by an official body. This committee after testimony by many experts, such as Haldane, Collis, Boycott, Pembrey, etc., relaxed the then existing standard for CO_2 and limited the wet bulb reading. The Chicago Commission on Ventilation came to substantially the same conclusions in 1914. Since that time the big work in ventilation has been carried on by the

New York State Commission appointed by the governor of the state in 1913.

Man is an homothermic animal, that is, in health the body attempts to maintain its temperature practically constant independent of environmental temperatures. In order to do this a source of heat is necessary and this is derived from the food consumed. This food serves to replace the tissue broken down by use, to increase body weight, and lastly to serve as a source of energy for daily activity with its resultant by-product heat. If most of this heat were not passed off to the surrounding atmosphere, the body temperature would rise and a state usually referred to as fever would ensue. Fortunately, a means is provided by which the excess heat may be removed, and this is by means of the physical processes of conduction, convection, radiation, and evaporation. The three atmospheric conditions governing these methods of heat loss are temperature, humidity and air motion. The temperature, humidity and the air motion present in rooms taken together determine the rate of heat loss and if the combination of these three is such as to readily remove from the body its excess heat the body will be comfortable; if, on the other hand this combination provides an atmosphere not conducive to heat removal, the feeling will be one of depression and malaise.

We may now definitely state that the primary purpose of ventilation (in the absence of artificial toxic contamination) is to maintain a comfortable environment for human occupancy, and that this depends solely on the ability of the atmosphere to remove the body's excess heat; further we may define good ventilation as the maintenance of an atmosphere of such temperature, humidity and state of motion as will cool the human body without chilling it.

As a result of studies of the New York State Commission on Ventilation, it has been shown that for sedentary workers such as school children the most satisfactory results are obtained with a temperature of 66°–68° F. and a relative humidity of approximately 30–60 per cent, although in this temperature range humidity plays a minor rôle, and lastly the presence of a slight non-uniform and intermittent state of air motion best described as that which takes place near an open window without a direct breeze.

At a temperature of from 65° to 68° F. there exists a peculiar relation between the factors (temperature, humidity and air motion) which influences heat loss from the human body. This relation is such that very wide variations in the humidity and the presence or absence of air motion do not materially alter the degree of comfort of the exposed persons. In this temperature range such a wide latitude as regards humidity and air motion exists that practically at all times such environments will be found to be comfortable.

If, on the other hand, a temperature over 70° F. is maintained, it will be found that small fluctuations over 60 per cent in humidity or the absence of air motion will immediately alter the state of comfort for the worse, and in a highly marked degree. The only exceptions to the foregoing statement exist under two conditions in which cases we must allow deviations from the foregoing rules. The first of these is in the case of elderly people whose metabolism, it has been shown, may be 10–15 per cent below that of middle aged people, and secondly in the case of sick persons who likewise may have less heat to pass off to the surrounding air. In both of these cases is it necessary to maintain higher room temperatures in order to produce a feeling of comfort. The variations in the nature of employment and the effect of clothing are so obvious as to require no further discussion.

THE CRITERIA OF VENTILATION

In general three types of ventilation standards have been in use in the past. The first of these, the carbon dioxide

standard, simply imposes the condition that a room shall have less than a certain concentration of carbon dioxide as found on analysis with suitable apparatus. The second standard is that which imposes the condition that the room shall be supplied with 30 cubic feet of air (temperature not specified) per person per minute, a standard which does not seem to concern itself with the results achieved by this amount of air, but only insists on its provision. Both of the foregoing standards are based on highly erroneous conceptions of ventilation and have yielded results in harmony with their fallaciousness. Reference need only be made to the foregoing pages of this paper in which data are cited to show that carbon dioxide may be extremely high in an atmosphere and still comfort may be had. With respect to the use of very large volumes of air, over 30 cubic feet per person per minute, the following extract from a report of a House of Commons select committee on ventilation is highly illuminating:

> When one considers the enormous volume of air, equal to ten times the cubic contents of the House of Commons, which is passed through it every hour, also that the elaborate tables of air analysis are apparently all that could be desired and yet ventilation is so notoriously bad, it is clear that there is something very radically wrong with mechanical ventilation by impulsion, and that tables of analysis and of volumes of air passed through a building are not to be accepted as correctly indicating either the general purity of the air or the efficiency of the ventilation.

It is not the quantity of air which requires control but in the final analysis the question resolves itself into the maintenance of a condition promoting heat loss. And this brings us to the most logical standard in use—the maintenance of a dry bulb temperature of from 65° to 70° F., and not exceeding 70° F. with an absence of drafts of cold air.

Obviously our problem in the summer season is different from that in the colder months of the year. In the winter the effort must be directed to avoid overheating while in the summer not being able to reduce the temperature we increase the cooling power of the indoor atmosphere by allowing the wind to create air motion in the living rooms.

It cannot be reiterated too often that good ventilation should produce a sense of comfort and that any system which fails in this regard is a failure as a ventilating system.

PRACTICAL APPLICATION OF THE NEWER KNOWLEDGE

The problem of ventilation presents a more complicated physical picture when approached from the viewpoint of heat removal than it does when approached from the older and incorrect standpoint of the removal of noxious gases or morbific matter. In the latter case it is only necessary to wash out the air of the room with outdoor air and so reduce the carbon dioxide content of the room air to a predetermined value and the assumption is that satisfactory conditions will ensue. From the best control aspect the problem consists in realizing that from the room in question heat is being removed by any air circulation present (convection), by the direct escape of heat (conduction), and by radiation from the walls of the room, and at the same time heat is being supplied by the radiation in the room and by the persons therein.

In its practical aspects the problem is fortunately not so complex as may appear from the foregoing analysis; the balance between these factors is not so delicate that the problem cannot be readily handled.

We must at once differentiate between workshops where toxic gases may be produced and where dust and fumes may complicate the picture, and the ordinary room (be it large or small) where the occupation is sedentary and no injurious gases are present. In the former factories or workshops it is often necessary and advisable to make use of artificial exhaust or plenum ventilation to produce a satisfactory atmosphere. This problem

is a highly specialized one and cannot at this time receive further comment.

Let us turn our attention to the uncomplicated problem of the usual type of room such as the schoolroom and the auditorium. Here we are dealing with persons under sedentary conditions who enter a room which must be at such a temperature that the persons do not experience a sensation of cold; there must exist no serious chilling drafts and still after being in such a room for one or more hours the conditions as regards cooling power of the air must be essentially the same. The difference between the auditorium with its large group and the schoolroom or home with fewer persons is that it is possible in the latter case to dissipate the excess heat by means of open windows, corridors and transoms, while in the former case plenum ventilation is necessary and is highly recommended for this purpose. In general we may say that rooms housing over 75–100 persons require such means of artificial ventilation. And the most satisfactory installations of this type are those designed to supply a small volume of cool air moving at low velocity, and so directed as not to impinge directly on the occupants of the room.

VENTILATION OF THE SMALL ROOM

The schoolroom presents a problem different from that of the auditorium. Here the disposition of floor space is such that no person in the room is at a very great distance from the windows and hence all may receive the benefit of the cool air entering therefrom. The physical proportions of schoolrooms are such that with the usual number of occupants the heat produced by the pupils may be easily dissipated without fear of chilling drafts of large quantities of cold air.

The most exhaustive study of school ventilation is that of the New York State Commission. This commission working over a period of several years examined in detail the systems in use for this purpose and obtained detailed experimental and operating data on the most satisfactory types of ventilation in use.

The commission as a result of its studies found that the method usually designated as window supply-gravity-exhaust, making use of direct radiation and slanting window boards, "was the most promising method for the ventilation of the classroom where local conditions permit its use" (with freedom from dust and odors). The window method of ventilation maintained a condition of temperature approximately 2° lower than the fan ventilated rooms (which would be very drafty at the lower temperature of the window ventilated rooms), and furthermore the temperature was more variable (and hence less monotonous) in the window ventilated rooms. Of necessity the air motion was found to be greater and more uniform in the fan ventilated rooms. Lastly, and of utmost significance, the window ventilated room at 67° F. was found to be more comfortable than the fan ventilated room at 69° F. (at which temperature it was necessary to maintain the fan ventilated rooms in order to prevent chilling of the occupants).

The commission also conducted a lengthy study of the prevalence of respiratory diseases among the school children in rooms using both types of ventilation and this study disclosed the fact that the fan ventilated rooms showed an average of 18 per cent more absence due to respiratory illness and 70 per cent more respiratory illness among children in attendance.

FAN SYSTEM AS CONTRASTED WITH THE WINDOW SYSTEM

Since the window-gravity system of school ventilation achieves results which indicate its superiority over the fan system it seems obvious that the former system is the one which should be used in future installations. There are, however, many additional reasons for preferring the window to the fan method of schoolroom ventilation.

First Cost—The construction cost of fan systems with supply ducts is considerably greater than that of the window system. McLure found in his study that the cost was from 22 to 85 per cent greater in the case of fan ventilated schools than window ventilated schools. On this basis Winslow has conservatively computed that about three million dollars a year is needlessly spent in the installation of fan systems in the public schools of the country.

Cost of Maintenance and Operation—Since the use of the fan system at once implies the overheating of enormous volumes of air which are almost immediately blown out through the roof of the schoolhouse it must be obvious that this method costs more for operation than does the window method. In New York State alone, according to highly conservative estimates of Professor Winslow, $200,000 is wasted in this manner each year.

That the maintenance cost of fan systems is greater than that of the window systems seems so obvious as to require no further comment.

Disuse of Fan Systems After Installation—Earlier in this paper it was pointed out, that in only 31 per cent of the cities studied by McLure was the ventilating system used outside of the heating season. This at once makes it appear that 69 per cent of the systems are used for heating purposes. And further McLure finds that only about half of the systems used in the heating season are used continuously. A large portion of the huge sum of money spent for such installations labors only a small portion of each year.

Supervision and Complexity of Operation—A fan ventilation system requires supervision by a trained operator. The problem of operation of such systems is not simple. It is the writer's opinion that in a fair degree many (but by no means all) of the poor results with such systems might be in some measure remedied by expert supervision. This is costly and will probably never be forthcoming. The fact that the teacher may regulate conditions in her classroom and thus be free to emancipate herself from overheating is a decided advantage of the window method of ventilation.

Poor Design—If fan ventilation is to serve its purpose the duct system by means of which the air is distributed to the individual rooms should be so designed and constructed that the quantity of air supplied to each room may be varied at will depending on outdoor atmospheric conditions; the buildings on the windward side, for instance, may require a larger volume of warmer air than those exposed to the sun on the leeward side of the building. The only duct system which makes this possible is that known as the individual duct system. And in spite of this only 24 per cent of representative buildings with the split system were provided with individual ducts as contrasted with 76 per cent with trunk ducts.

SUMMARY AND CONCLUSIONS

The fan system developed on the basis of an erroneous knowledge of the need for ventilation should be abandoned (as applied to schoolrooms and auditoria of less than 75–100 persons capacity), because it fails to produce satisfactory atmospheric conditions; because it leads to a high incidence of respiratory disease; because its first cost is excessive; and because its operation is poor and wasteful of heat. It should be superseded by the window system of ventilation with gravity exhaust which comparatively is highly efficient and inexpensive.

If the changes suggested in this paper did not conflict with the regulations of certain state authorities and boards the problem would be considerably simpler than it is at this time. The present status of the problem calls for the recognition by the state authorities of the facts as outlined in this paper. The final step calls for the revocation of the present laws and the substitution therefor of a law requiring the construction of gravity

exhaust ducts in all schoolrooms and the maintenance therein during the heating season of a temperature of from 65° to 70° F.

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DISCUSSION BY GEORGE T. PALMER, DR.P.H., FELLOW A.P.H.A.

Ventilation is almost as much a perennial subject of disputation as the length of quarantine for scarlet fever.

Dr. Greenburg has laid the facts clearly before you.

The ventilation specifications of the schoolroom from a hygienic standpoint are coolness and air circulation, irregular, fluctuating, intermittent, and, in amount, about half the present standard.

The ventilation equipment of a school building should be such as to make this air condition possible. This condition can be achieved with window ventilation and gravity exhaust.

Window ventilation with gravity exhaust is now indirectly prohibited by state laws or regulations which require a continuous air flow in the ratio of 30 cubic feet per minute per person. This cannot be met by window ventilation with gravity exhaust.

The 30 cubic foot standard was placed in the statutes on the mistaken theory that respired air was poisonous and this amount of air flushing was necessary to protect health.

We know, and have known for some time, that it is not the chemical composition of the air of an occupied room that affects comfort or health, but the thermal factor, temperature.

There is thus no justification whatever for requiring the 30 cubic foot standard for schoolrooms.

Dr. Greenburg has pointed out that window ventilation with gravity exhaust is cheaper to install, cheaper to operate, produces a more comfortable atmosphere and produces a healthier environment.

Why is it opposed?

To my mind there are four obstacles in the way.

First, there are prohibitory laws and regulations. So long as these exist, school boards cannot build such systems legally.

Second, is the conservation of school boards. It is difficult for them to break away from the time honored custom of mechanical ventilation. There is some excuse for their attitude, however, for when confronted by the health people asking for one thing and their consulting engineers and architects recommending something else, it is not altogether surprising that they listen to the engineering opinion.

Third, there is the habit of writers on school hygiene to discuss questions of ventilation and to draw their material from older books which support the poison theory of ventilation. This tends to keep the public and the teaching staff misinformed.

The fourth obstacle and perhaps the most important of all is the prevailing sentiment among ventilating engineers that mechanical ventilation is the one and only panacea. Until the ventilating engineers alter their attitude we can hardly expect school boards to change their opinions or state laws to be modified.

I would remind you that the outburst against polluted water supplies has resulted in safe drinking water.

The pollution of streams with sewage is yielding, although perhaps slowly.

Dirty milk is giving way before the educational campaign for clean and safe milk.

School ventilation still beats against a stone wall clamoring for relief.

In the case of water, sewage and milk, health protection is being achieved at increased cost.

In the case of school ventilation we witness the unique, unparalleled situation of health people asking for the privilege of securing health by the expenditure of *less* money. Is

it the strangeness of seeking to do better things at decreased expense which contributes to the blocking of ventilation progress?

As an engineering section of a national association of health workers, I ask you to take a decided stand on this subject with the hope that you will lend your influence to the alleviation of a situation that is inimical to health and a needless drain on the taxpayer. The least that we can ask is that you direct your energies to the modification of state laws so as to permit the free development of window ventilation in open competition with mechanical ventilation.

THE RÔLE OF THE CHILD GUIDANCE CLINIC IN THE MENTAL HYGIENE MOVEMENT*

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THE GREAT POPULAR interest manifested in the health problems of the child is an outstanding development of recent years. Studies in preventive medicine and the broadcasting of available knowledge for general consumption have helped to nourish this interest and as a result the public has demanded facilities for improving and directing various phases of the child's physical welfare. While earlier medical and lay attention was largely focused on individual organs, the present stress is laid on consideration of the body as a whole.

Shortly after the launching of the modern health movement, social and health agencies, parents and educators began to realize that health has a mental as well as a physical basis and broadened their definition of hygiene as they became better acquainted with advances already made in the closely allied mental hygiene field. The fact that mental abnormality or disease may negate physical health was perhaps not so dramatically revealed to them as it was to us in one of our clinics where one former blue-ribbon winner in a "Better Baby" contest was referred for mental defect and another former prize baby was referred as a serious behavior problem. In any case, various professional groups have come to believe that the mental and physical health of the child are not only intimately related but interdependent and that preventive health work involves study not of isolated organs in an isolated body but consideration of the individual child as a living, functioning, physical and mental whole.

As for the mental hygiene field, less than two decades cover the period of development of a modern point of view in this country. The advance guard of physical health was well on its way when the term "mental hygiene" was coined. "Insane asylums" were all we had to start with and in the public mind they were regarded with even more horror than the obsolete "pesthouses" of medical history. Naturally mental hygienists centered their first attention on the problems involved in the care of the insane. The group organized under the name "National Committee for Mental Hygiene" worked hard to improve methods of care and treatment; to change musty "lunacy" laws; to abolish the very word "asylum"; in short, to humanize the public attitude towards those afflicted with mental disease.

The gradual shift of attack from the most pathological to the preventive

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aspects of the situation is a familiar occurrence in medicine. In this case the initial program of classifying and sorting, legislating, building, and propaganda was soon followed by the development of centers for research and teaching in mental diseases. This research effort likewise was at first directed toward the grosser pathological conditions, the so-called "insanities," but later came to include the borderline psychopathic and psychoneurotic states and other mental disorders whose existence in the community had to be handled by other measures than institutionalization. At about this time numerous surveys of penal institutions, reformatories and jails revealed psychiatric problems as the root of many conduct disorders and stimulated an increased interest in the possibilities of preventive work in the mental hygiene field.

Subsequent clinical study of various mental and behavior disorders in adult life indicated that treatment was often hopeless in the late stage at which it was begun. The cases under observation had run a long and obstinate course, had frequently started in childhood and should have been treated years before if treatment was to be effective. The significance of common early symptoms previously regarded as things the child would "outgrow" was now appreciated, but only in the light of serious developments almost beyond the reach of treatment. All these data placed fresh emphasis on the importance of preventive work on the child as the next practical step in the mental hygiene movement.

The participation of the National Committee for Mental Hygiene in psychiatric work with children was made possible by the Commonwealth Fund's organization of a Five Year Program for the Prevention of Delinquency and the grant to the National Committee for Mental Hygiene of funds for the establishment of the Division for the Prevention of Delinquency as one section of that program. In planning the work of the division it was early recognized that in spite of the progress made in various phases of child health and child welfare, these activities to date were uncoördinated, that each group was taking only a fractional interest in the child and treating him either as a mind to be educated, a physical organism to be safeguarded or an offender to be disciplined. It was felt that a coördinated attack from the physical, mental, educational and social angles was essential if the child as a whole was to be understood and his adjustment worked out in accordance with the best standards developed in each of the separated fields.

With this goal in mind there was assembled personnel trained in general medicine, psychiatry, clinical psychology and social work. After one clinic experiment which concentrated on juvenile court problems, it was decided that really preventive work on the personality and behavior difficulties of children should be started before the problem came to court and should be directed toward helping parents, schools and social agencies to understand and deal with incipient cases. To reach children who were problems by reason of bad habits, so-called nervousness, undesirable character traits such as temper, quarrelsomeness and disobedience, and behavior disorders such as lying, stealing and truancy, it was necessary to make the clinic a community affair with contacts that brought it in touch with parents, teachers, physicians and social agencies, in short with all those interested in nipping in the bud tendencies which might make children problem adults. The idea was to detect and treat children's difficulties at a stage when actual care in the community was still possible and community resources could be used effectively in a preventive way.

A child guidance clinic handles children between the ages of 3 and 17 whose personality and behavior difficulties constitute a problem in the home, school or community. The emphasis is placed on the diagnosis and treatment, not of feebleminded or psychopathic cases, but

of cases admitting of constructive adjustment in the community. Each case receives a complete social investigation, a thorough medical examination, a full psychological and educational survey and an intensive psychiatric study. The necessity for work in all these fields is revealed in practically every case.

The child who is a pest in the classroom may be proving a nuisance there not only because he is undernourished and hyperactive, because he has diseased tonsils and an uncorrected vision defect, but also because he is educationally misgraded, is spoiled and mishandled at home, and is exposed on the street to gang influences which make his play life destructive of his respect for authority. A youngster may steal because he has an abnormal desire for sweets, because he wants money to buy popularity from his school mates, because he is the tool of brighter delinquents, because he has a sex conflict or for reasons more obscure. The interplay of factors only to be detected by study of every phase of a child's life is so constant that an exclusive emphasis on the findings of any one field of clinic activity is practically impossible. In treatment, all the resources of the community—its clinics, schools, playgrounds, special classes, visiting nurses and social agencies—are used. It is unusual for treatment as formulated in a child guidance clinic to be concentrated on the child alone, since parents, teachers and other persons entering into the child's life must be assisted to deal with the problem he presents if that problem is to be adjusted.

In its general scope child guidance work embraces all the techniques developed in medicine, psychiatry, psychology and social work, and on its interest in the developments in these fields depends its progress. It is not, however, a monopoly desiring to crowd out special workers in allied fields. Its very life is one of coöperation. A child guidance clinic not only draws its cases from schools, clinics, visiting nurses, physicians, and social agencies but in treatment refers back to them for help in caring for the problems it discovers. It has a most vital interest in the further progress of the work of all health and welfare organizations since their development means more and better facilities for the diagnosis and treatment of its cases.

In cities where the National Committee for Mental Hygiene has established permanent clinics as part of its work under the Commonwealth Fund—in St. Louis, Dallas, Minneapolis, St. Paul, and Los Angeles; in Memphis and Richmond, where it has assisted in the organization of child guidance clinics; and in Cleveland and Philadelphia, where it is now running demonstration clinics—it has relied on the community's health, school and social facilities and established cooperation of a sort that recognizes interchange of services as the basis of its existence. Though it concentrates on the preventive aspects of mental hygiene, it gives its right place to physical health and wishes to be considered an essential part of the general health movement which is penetrating every part of the country to-day.

The Child Guidance Clinic idea merely represents a recent and practical step in the evolution of the modern health movement.

AIDS IN SECURING BETTER REGISTRATION*

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IN THE PRESENTATION of this paper no claim is made that any original or unknown means of securing better registration will be brought out, but rather a discussion of the various means which have been employed by the state of Delaware and other communities for the securing of as near as possible 100 per cent registration of births and deaths.

The question of vital statistics as we all know is of great importance not only to health departments but to individuals as well. This has been long recognized in foreign countries, their records dating back for very many years; in France to 1539; in Sweden to 1600. In the United States, however, the major portion of the vital statistics available in state or city departments of health are less than 50 years old, with the possible exception of New York, Boston, Philadelphia and New Orleans whose statistics are reasonably accurate for more than a century.

The first state to have carried out the reporting of births, deaths and marriages upon a really efficient basis was that state which has been the pioneer in this as well as so many other public health activities, the state of Massachusetts. The first enactment in Canada was in the province of Ontario in 1869.

Following the resolution of the Conference of State and Provincial Health Officers, in 1902, a resolution of Congress in February, 1903, and of the American Medical Association in May, 1903, the U. S. Bureau of Census established the first real death registration area beginning with the statistics found as the results of the federal census of 1900. This area included the states of Maine, Vermont, Massachusetts, Rhode Island, Connecticut, New Hampshire, New York, New Jersey, Indiana, Michigan and the District of Columbia. In name it had been established in 1880; but in fact, at that time, there were only 2 states, Massachusetts and New Jersey, and the District of Columbia which had any accurate statistics of any value, although the laws had been passed in some 20 states.

From time to time other states have been included in this area until at the present time 38 states and the District of Columbia comprise this area. The birth registration area was established in 1915 and now includes 34 states and the District of Columbia. West Virginia was the only state to be admitted to both the death and birth registration area during the present year. It is the desire of the Bureau of Census and its adopted slogan that all states shall be in the birth and death registration area by 1930.

The prime consideration for the admission of a state to the registration area, as you know, is a 90 per cent report of the births and deaths in that state. While it is true that the state as a whole must secure this percentage, it is perfectly evident that each and every community in that state must do its share towards securing the reports of its own districts. Some of the aids to be enumerated may be available to certain communities and some may not. A large state is not always able to use the methods that might be applicable in a small one, but if we consider that every township, village, municipality and county may use any or all of

* Read before the Vital Statistics Section of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 20, 1925.

these aids, it is again evident that the securing by them of the necessary percentage will entitle the state to be received into the Registration Area.

It is hardly necessary to reiterate the old statement that only those communities in which this bookkeeping of life is highly developed are able to view and correctly visualize their public health problems. If we are unaware of the causes of mortality and morbidity, most assuredly then we are unable to concentrate the necessary effort to eradicate the factors of deaths which are preventable and which are so vitally affected by the age and race of the inhabitants of our state or community, especially marked in communities with large groups of negroes or foreign born population.

If we are to have any conception of our actual birth rate and of our actual infant mortality rate we must well nigh have perfect registration of births. The failure in any large state to effect a 100 per cent registration of births may be due to the neglect of a few births in each municipality, the aggregate of which may be more than 10 per cent of the total births; so also, if a locality has a complete registration of deaths the failure to secure even 5 per cent of the births in that community will raise their infant mortality rate out of all proportion to the actual rate.

The first requisite for the proper registration of births and deaths is a vital statistics law which should be comprehensive. The Bureau of Census is desirous that each and every state shall have passed the so-called model law with which you are all familiar. In Delaware, we not alone have what is practically the model law but our statute has in addition certain requirements which, we believe, are also included in the laws of the state of Massachusetts. In this connection I refer to the notification by a postcard which is furnished by the State Board of Health, directly to the Central Bureau of each birth, death and marriage within 24 hours after the occurrence, to be followed within 10 days by a certificate to the local registrar of the county or municipality in which the event occurs.

It may be questioned by many as to whether such a law is not burdensome upon the physician, midwife, minister or whoever is responsible for the return of such reports. We find no complaint on this score, as the cards are fully printed and require only a minimum amount of time to fill in, while the value to the state of these report cards cannot be overestimated. The state of Delaware in conformity with those of the other states who operate under the model law and, we believe, approximately 44 operate now under this law or some modification of it, have returned to them monthly a certificate of their local registrar. It is, at this time that the great value of these notification reports is evident.

In our Division of Vital Statistics each postcard is checked against the return of the local registrar, and invariably we find that a number of certificates have not been returned for which there is on file in the Central Office a birth card notification. It is quite certain that at least 5 per cent of the births which have not been reported are checked up by this means.

The second check upon the registration of births which has proved to be of great value is the very close supervision of midwives. The registration and supervision of the midwives is a public health problem which is deserving of and is receiving at this time, due to the aid of the Sheppard-Towner Act, great attention in all the states, and especially in the south and those states bordering the south where we have a considerable group of colored people. Among these people the employment of midwives at the time of childbirth is far more common than the employment of a physician. Midwives as a group, outside of those in states which require specific education, constituting only 4 or 5 of the states in the Union, are uneducated, uncleanly, illiterate and superstitious, and while they may have no intention of actually violat-

ing the law they have that lack of knowledge which demands constant supervision that they may conform with the requirements of the state.

The state of Delaware has in each county 3 public health nurses and each county is divided into 3 districts. Each nurse keeps in constant touch with every known midwife in her district and some are constantly finding additional unregistered midwives. This state requires the registration of and issuance of a license to all midwives. In order to secure this license, which is renewed annually, each midwife must attend conferences and live up to the various rules and regulations of the State Board of Health. It is at this time that we constantly bring to their attention the importance of prompt and early return of the birth postcard and of the actual certificate. This work has been carried out with great intensity for the past 2 years, and we feel that it has been productive of better than 95 per cent registration of births attended by midwives, many of which were formerly unregistered.

Another means of securing better registration and one which is especially appreciated by the parents is the issuance by the State Department of Vital Statistics of a birth certificate advising the parent that a certificate of birth has been received and filed in the Central Bureau of Vital Statistics. These certificates have been issued by the state of Delaware for several years past, to every mother immediately following the receipt in the Central Office of the certificate of birth. We have found that as soon as one child receives a certificate that we immediately receive requests for the issuance of certificates for the other children in the family. Many times we find that there has been no record of birth filed for these children and that in addition many have been filed with surnames and Christian names absolutely contrary to the present names, and that some have been registered as males who are females, and even the dates of birth are not at all correct. In fact, in checking over the original certificates we find that each item has been found incorrect in one or more instances. These are corrected in our Central Department and a proper certificate forwarded to the parent who has requested them.

During the past year alone, the Bureau of Vital Statistics has registered at least 500 previously unregistered births of all years from 1913 to the present, following the request for these certificates. We should not underestimate the value of furnishing such certificates to the parents. These certificates are, of course, furnished without charge and are not to be in any way confused with the certified copies of birth certificates which all states issue.

It would be of considerable value if large sized cities would issue a certificate, provided the state does not do so. The method of delivery of these certificates to the parent is again an additional aid. It is customary in some states to use the mails for the delivery of these certificates directly to the parent. We have found that this method is not satisfactory for several reasons, first, that many families have moved and left no address, and that in many instances, especially among the foreign born, the difficulty of spelling names correctly has made many of these certificates very inaccurate. We have, therefore, adopted a method which has not only been of value to us as a department but has brought an amazing number of requests for certificates and resulted in the discovery of many unreported births. I refer to the fact that we in our state distribute these certificates through public health nurses.

As stated previously, each county has 3 public health nurses and the state has in the city of Wilmington 6 additional nurses. The certificates of children born in their districts are forwarded to these nurses and are delivered by them directly to the parents. In this way we secure a means of entrance to the family and the means for further follow-up instruc-

tion to the mother in the care of her newborn infant. This has been one of the most effective means of entering new homes, and whereas previous to the adoption of this method the public health nurse was often looked upon with suspicion, we have found that when she presents herself at the door with a certificate she is a very welcome visitor.

Another medium which we have found to be of great value is the use of the newspaper as a means of finding unregistered births. As you are well aware, the advent of a newly born citizen in a small town is not an unknown nor unimportant event, and if we clip the local newspaper of a reasonably fair sized city we find in the news of various towns and villages many reports of the births of the son or daughter to Mrs. Jones, Mrs. Brown or Mrs. Smith. By clipping and checking these items against his birth reports, the local registrar may find many births not reported to him. We are able to maintain our own clipping service and also check against the registrar's returns. We find that while most of the births reported in the newspapers have been registered, the attendant at a few births has failed to report to the Bureau of Vital Statistics and we are then able to gently remind him of the fact that the birth has been reported in the newspaper and has not been properly reported by himself.

The value of the right person as local registrar is very great. All of you who have found it necessary to go out and secure local registrars, in those states in which the local registrar is not an official fixed by law, will agree that the securing of a registrar with a proper outlook as to the importance of the registration of births and deaths, and who is willing to constantly check up on his returns, is no easy matter. We have, therefore, found it advantageous to secure a sufficiently large number of local registrars so that their territory may be relatively limited, and also that it is best to secure as registrars those who have offices for the conduct of some other public business which is largely paid for by fees.

In this state, at least, the Notary Public, Post Master, Justice of the Peace and Insurance Agent have proved valuable as local registrars. These men as a rule maintain an office and a clerk for the conduct of their other business. A position as a local registrar entails upon them no expense. Their office is open for business at practically all times and the person who carries on the clerical work of the office carries on that additional work necessitated by registration, so that whatever income may be received for acting as local registrar is practically all gain. In Delaware, the local registrar makes one copy of the certificate received and forwards the original certificate to the State Department of Health and for the making of this copy receives 25 cents. In addition he receives 50 cents for each certified copy; 50 cents for transportation permits, and disinterment permits; and he watches closely the returns of his district to secure these fees.

One other item which may be suggested as of some value is the checking of death certificates received to find out whether or not the birth of the deceased person has been reported. This is of special value in those cases where the death occurs in the early years of life.

The value of the payment of a fee for the return of birth certificates is to my mind doubtful, unless this fee is made sufficiently large to be worth while. In most instances it is of relatively no value.

In the matter of death certificates, the means of aiding better registration are relatively few. The greatest is, of course, the necessity of securing a burial permit by the undertaker, and probably is the means of securing the return of the large majority of death certificates. Another means that has proved of value has been the checking of cemetery records of burial against the records of death on file in the Central Bureau. That is, the sextons of cemeteries should be required

to make a record of each person buried in a cemetery and these records should be available for inspection by agents of the State Board of Health at any time they so desire. In our state the law requires that the State Board of Health may require reports at any time from sextons or other cemetery keepers to this department.

Another possible means of securing death returns which may be previously unregistered is that of requiring casket-makers to return the sale of caskets within the given community, and that these be checked against the death certificates returned. Both of these means while of relative value, are not in any way to be expected to check many failures to return death records.

Perhaps the greatest means of all is the constant education of the public to the value of the registration of births and deaths and with the special emphasis upon that of births. We have found that by means of motion pictures, newspaper editorials and lectures that we reach a great many people. A vast majority of the persons directly interested in their children may be reached through the Parent-Teacher Association and through the individual women's clubs. In those states which are largely rural, you will also secure publicity through the Grange.

Finally, frequent reference to registration should be made in the bulletins of your department, so that the physicians and others concerned will be constantly reminded of their duty in this matter.

IMPROVEMENTS IN CHILD HYGIENE*

CHARLES H. KEENE, M.D., FELLOW A.P.H.A.
Professor of Hygiene, University of Buffalo, Buffalo, N. Y.

IN A FIELD like child hygiene it is extremely difficult, in fact practically impossible, to confine this discussion wholly to the beneficial changes occurring during the past year. It seems better, therefore, to touch upon those advances whose effects have been most manifest during the decade just past.

During that time, some of the most marked improvements in death rates have come in the childhood ages—from birth to 15 years. Within these 15 years of life the most gratifying gains have come in the first 5 years, particularly in infancy.

What are the main causes of these drops? It would seem that these are not so much the discovery of new facts, or development of new methods, as the better and more general application of information that we already have. For instance, more than 15 years ago, Dr. J. P. Sedgwick of Minneapolis, together with others, was strenuously advocating breast feeding instead of milk modification, but it is only within the last half decade that great emphasis has been generally put upon this most important factor.

An improving death rate in infancy, largely through cutting down the rate for diarrhea and enteritis from 72.1 in 1915 to 39.5 in 1922, has come about through a more general use of pure water supplies, pasteurized milk, well baby clinics, Little Mothers' Leagues, the visiting nurse, and prenatal services. This more extended use has been made possible through the activities of various organizations, both volunteer and official, whose fundamental aim has been to spread information concerning the need, results, and possibilities of these phases of health.

* Read at the First General Session of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 19, 1925.

In short, education of the public is the foundation upon which these advances rest.

The first and most important factor then has been, and still is, lay education in child care and feeding, particularly the instruction of mothers in the care and feeding of their infants during the first year of life, with particular emphasis upon breast feeding.

The death rate for infants during the first month of life has improved very little, although it is destructively high. Continued, repeated, and special emphasis is needed, therefore, upon those factors which will cause improvement here. We know what these factors are, but general information, both on the part of the nursing and medical profession on the one hand, and on the part of young or expectant mothers on the other, has not kept pace with scientific knowledge. Not only must breast feeding be continuously advocated, in season and out of season, but obstetrical and prenatal information must be widely disseminated. Better care at the time of birth has had some effect on the infant and maternal death rate but motherless infants stand less chance of survival than do others. Control of midwives is therefore essential.

In the prenatal field, instruction to mothers regarding their own health and care is proving beneficial. Greater emphasis is needed on the feeding of expectant mothers during pregnancy. At this time, nutrition, particularly as related to the vitamins in the mother's diet, and to the direct rays of the sun, is a rapidly expanding field which should have marked beneficial effects on the chances of life of the newborn.

In the years 2 to 5, we shall hope to see an improving death rate through a more general use of the Schick test and the Dick test, and the sequent immunization of those susceptible to diphtheria or scarlet fever. While much of the work in this relatively new field has been done upon older children, this is largely a matter of convenience, as the large assemblages of children in the schools lend themselves readily to mass treatment. Largely as a result of this, the preschool age is a much neglected one. A general development of the nursery schools (similar to the ones in Los Angeles) will not only benefit directly those attending, but will offer opportunities for mass immunization of this younger group.

In the school age—5 to 14 years—we are beginning to get a careful study and a more scientific application of school health activities. In this country medical inspection is 30 years old, and the physical examination of school children nearly as aged. In this field, scientific study and application of the knowledge of child welfare is, however, quite recent. There has been no uniformity either in aim, effort, or results. In the majority of school systems, this great possibility for saving childhood has degenerated into a half-hearted observance of the law which requires an annual physical examination. Usually, this is a farce.

The Child Hygiene Section of this Association has a special standing committee at work on this problem. This committee hopes to work out a scheme of operation and of record keeping which will result in a real health advance. Money enough is being spent on the medical inspection and physical examination of school children to bring great health advantages to them if these funds were properly and scientifically used.

During the 5 years just past, great emphasis has been placed upon supervision of the growth of school children. Weight as related to height has been made a fetish. This emphasis has been desirable, and has had a wonderful effect in interesting children in their physical condition. More moderation in claims as to the scientific accuracy of the tables issued would seem desirable.

During these 5 years, too, there has come about in the schools the beginnings of a real education for health. The old, dry, uninteresting, and frequently demonstrably false physiology has been forced

out of the schools to a considerable extent by the science of hygiene, and this in turn is yielding to a living, interesting, absorbing knowledge of how to live. The present effort is not to teach the child to patter off some paragraphs concerning the bones, the muscles, or the circulation, nor to talk about health; but actually to live health, to form good habits concerning cleanliness, food, air, sunshine, rest, exercise, and the avoidance of communicable disease, and to build in him ideals of citizenship in health matters that will make him a healthful influence in municipal and state affairs.

Since the war, there has been an enormous increase of interest in the amount of play and physical recreation offered to children. While this is not markedly affecting the death rate of childhood, it is undoubtedly improving their health, and, as time goes on should have a beneficial effect on the death rate at older ages, particularly as regards certain diseases of degeneration.

A new factor is just appearing over the horizon, a great interest in the mental hygiene of children. A few communities are sufficiently advanced to have started habit clinics for children. This whole field of mental hygiene is as yet scarcely scratched. With an increasing flood of mental misfits pouring upon our communities and into our institutions, the great need of increased work here cannot be overemphasized.

To summarize, we would stress improvements in death rates and in health due to safe and better infant and child nutrition; discovery of susceptibility and immunization against acute communicable disease; a properly functioning school health program, including teaching children how to live healthfully; and an ever increasing emphasis on the mental hygiene of childhood.

Milk Inspection Associations—The formation of district organizations for the supervision and improvement of milk supplies is a relatively new movement which promises much good. Incidentally the International Association of Dairy and Milk Inspectors, at the last annual meeting in Indianapolis this fall expressed itself as distinctly favorable to such a development throughout the country.

The milk inspection association of the Oranges (New Jersey) has rendered an interesting report of its activities for 1922 and 1923. The president of the association states that the public has evidently become convinced of the value of this work as shown by frequent requests for information relative to the quality of the various supplies. The consumption of certified and Grade A pasteurized milk is shown by tables and graphs to have increased at the expense of raw milk and Grade B milk, "which is proof that the demand for products of superior quality is increasing." The executive officer's report indicates that on the average about 9.5 per cent of the public health funds for the districts included are used for control of the milk supplies, which amount makes a per capita cost of slightly over 4 cents.

Conference on Negro Health Work—An important conference was held at the office of the Surgeon General of the U. S. Public Health Service, October 24, for the purpose of furthering health work among the members of the colored race. A new slogan, namely, "More National Negro Health Work," was adopted by the council and plans for the revision of the literature which is being used in connection with this work were agreed upon. A program was outlined for national negro health work during the year 1926; new literature will be published by the Public Health Service in coöperation with Tuskegee Institute. In addition the National Tuberculosis Association, The American Red Cross and the American Child Health Association have agreed to furnish special literature.

Particular emphasis was laid on the importance of the coöperation of state and local authorities in this movement, and also on the necessity for better general understanding on the part of the public, that the negro health week is but the beginning of a health program to last throughout the year.

The conference adjourned to meet again at Tuskegee Institute on January 30, 1926.

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QUALIFICATIONS FOR PUBLIC HEALTH NURSING POSITIONS*

IT IS GENERALLY known that hospital training is not sufficient training for nurses in the public health field.

The committee instituted by the N.O.P.H.N. to study visiting nursing found during its study that the requirements for the educational background for nurses are very flexible.

With the rapid development of public health nursing, the demand for nurses has exceeded the supply of qualified workers and we must therefore adopt desirable standards for the nurses in the public health field.

In a rapidly growing and expanding profession such as public health nursing we are faced at the very outset with the need of standards. Workers in the field have, through using their common sense and meeting the emergency as it has arisen, acquired field technique. Wishing to utilize this experience, we have endeavored to find out exactly what qualifications have enabled them to cope best with their problems.

It was the need of standards which caused the three national organizations, namely, the American Public Health Association, the State and Provincial Health Authorities of North America, and the National Organization for Public Health Nursing, to appoint a joint committee to consider the minimum qualifications for positions of directors and supervisors of public health and in addition to consider the higher standards which we hope to attain in 1930.

More and more nurses are being used for specialized fields such as communicable diseases, tuberculosis, school nursing, etc. There will be a still greater demand for trained workers in the future. Therefore, it is our problem to develop standards, to work toward properly trained workers, and to be prepared to supply those who are qualified.

By having properly qualified directors and supervisors the results of our work will be greater, more effectively done and more intelligently supervised. In this way they will be able to get the best results out of their subordinates and thereby meet the needs of the individual community.

STATISTICS

1. Schools of nursing, 1,744
2. Students registered, 50,897
3. Registration requirements of states:
   - 22 require 1 year high school
   - 10 require 2 years high school
   - 2 require 4 years high school (Ohio and Georgia)
   - New Hampshire prefers 4 years but requires 1 year
   - 4 require "admission to high school"
4. The following make no requirements regarding preliminary education:
   Washington, Tennessee, New Mexico, Nevada and Connecticut
5. The following require grammar school:
   Alabama, Mississippi, North Dakota and South Carolina
6. Rhode Island "as required by the board"
7. States requiring training schools to give "proof of preliminary education required or examination":
   - 5 states do not require
   - 23 do require
   - 14 question left blank
   - Wisconsin requires 4 years high school if under 18 years

* Report of the Committee on Qualifications for Public Health Nursing Positions, representing the American Public Health Association, the State and Provincial Health Authorities of North America, and the National Organization for Public Health Nursing, presented to the Public Health Nursing Section of the A.P.H.A. at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 21, 1925.

Iowa schools make own entrance requirements

8. The percentage of nurses who received an introduction to the public health field while in training is very small. (This information has not been tabulated.)

NOTE.—Number of students in training now who are high school graduates can be obtained only through separate nurse examining boards.

QUALIFICATIONS FOR THOSE APPOINTED TO POSITION OF SUPERVISING NURSE IN A PUBLIC HEALTH NURSING SERVICE

1. *Preliminary Education*

The minimum academic background should be two years of high school.

2. *Fundamental Nursing Education*

(1) Graduation from a school for nurses connected with a general hospital having a daily average of 30 patients or more and a continuous training in the hospital of not less than two years. Training shall include practical experience in caring for men, women and children, together with the theoretical and practical instruction in medical, surgical, obstetrical and pediatric nursing. Training may be secured in one or more hospitals.

(2) In addition to the services required in the fundamental technical education (obstetrics, pediatric, medical and surgical nursing), theoretical instruction and practical experience in one or more of the following services:

Public Health Nursing
Communicable Disease Nursing
Tuberculosis Nursing
Hospital Social Service
Mental Hygiene

(These services may be given in the school or taken as post-graduate work.)

(3) State registration in the state in which the nurse is to be employed.

3. *Qualifications*

In general a nurse supervisor should have the minimum qualifications outlined for the staff worker for 1930 and in addition she should have:

(1) Technical skill in the special field of public health nursing she is supervising.

(2) Ability to impart information in a constructive and sympathetic manner.

(3) Ability to delegate work and keep a satisfactory balance in the division of responsibilities.

(4) Ability to correlate the work of her organization with that of other social and health agencies in the community.

(5) Ability to stimulate initiative and progress of staff nurses.

(6) Loyalty.

(7) Understanding of personalities and ability to deal with them.

(8) A personality that inspires confidence.

(9) Interest demonstrated by activity in:

(a) Profession
(b) Community

(10) Good health.

QUALIFICATIONS FOR THOSE APPOINTED TO POSITION OF DIRECTOR OF A PUBLIC HEALTH NURSING SERVICE

1. *Minimum Qualifications for 1925*—These are in accordance with the qualifications for those appointed to positions in public health nursing as presented by the Committee to Formulate Standards for Positions in Public Health Nursing of the American Public Health Association presented at the Fifty-third Annual Meeting in Detroit, October 20, 1924, entitled "Desirable Qualifications for 1925" to become the Minimum Qualifications for 1930 or 1927, if possible.*

a. For nurses graduating from schools of nursing since 1920.

(1) At least four years of high school education or its equivalent.

(2) Fundamental nursing education—namely: Graduation from a school for nurses connected with a general hospital having a daily average of 30 patients or more and a continuous training in the hospital of not less than two years. Training shall include practical experience in caring for men, women and children, together with the theoretical, obstetrical and pediatric nursing. Training may be secured in one or more hospitals.

(3) In addition to the services required in the fundamental technical education (obstetrics, pediatric, medical and surgical nursing), theoretical instruction and practical experience in one or more of the following services:

Public Health Nursing
Communicable Disease Nursing
Tuberculosis Nursing
Hospital Social Service
Mental Hygiene

* *A. J. P. H.*, June, 1925, p. 514.

(These services may be given in the school or taken as post-graduate work.)

(4) State registration in the state in which the nurse is to be employed.

b. For nurses graduating from schools of nursing before 1920.

(1) No academic qualifications stated.

(2) Professional training or experience which has developed a wisdom and judgment which is valuable in the public health nursing field in spite of the lack of formal academic education.

(3) Fundamental nursing education—namely: Graduation from a school for nurses connected with a general hospital having a daily average of 30 patients or more and a continuous training in the hospital of not less than two years. Training shall include practical experience in caring for men, women and children, together with the theoretical and practical instruction in medical, surgical, obstetrical and pediatric nursing. Training may be secured in one or more hospitals.

(4) In addition to the services required in the fundamental technical education (obstetric, pediatric, medical and surgical nursing), theoretical instruction and practical experience in one or more of the following services:

Public Health Nursing
Communicable Disease Nursing
Tuberculosis Nursing
Hospital Social Service
Mental Hygiene

(5) State registration in the state in which the nurse is to be employed.

2. *Minimum Qualifications for 1930.*

a. Preliminary Education

The minimum academic background should be a high school education or its equivalent.

A college education should be recognized as a very material additional asset. Since this position presupposes a breadth of vision and the ability to deal with people, it is to be hoped that no organization will consider the appointment of a director who has not acquired two years of education beyond the minimum requirement of education for her staff.

b. Fundamental Nursing Education

Graduation from a school of nursing accredited in the state in which it is located and connected with a general hospital having a daily average of 30 patients or more and giving a continuous course in a school of nursing of not less than two years.

This nursing course shall include practical experience in the care of men, women and children together with theoretical and practical instruction in medical, surgical, obstetrical, pediatric and communicable disease nursing.

c. Public Health Preparation and Experience

(1) A nurse should have had at least two years of practical public health nursing field experience with a well organized association in part at least in some administrative capacity and she should have successfully demonstrated administrative ability and the power to interpret the health needs of the community.

(2) She should also have had a recognized public health nursing course in an educational institution presenting both theoretical and practical instruction including adequately supervised experience.

(3) An extensive and varied field experience may be considered to stand in part as an equivalent for such a public health nursing course.

(4) In addition to the services required in the fundamental nursing education, a candidate may have had practical experience in the following services:

Maternal Welfare
Infant Welfare
Communicable Disease Nursing, including Tuberculosis.
Experience in School Nursing may be considered an additional asset and quite essential for some positions.

(5) Registration under some state nurse practice law.

(6) She should of course have manifested wisdom, imagination, vision, judgment, loyalty and other traits of personality which constitute genuine leadership and executive ability which will enable her to inculcate in the minds of the members of the staff a desire to keep abreast of all the latest developments which affect the work in which they are engaged.

HELEN C. LAMALLE, R.N., *Chairman*
ANNA L. TITTMAN, R.N.
THERESA KRAKER, R.N.
MAYBELLE WELSH, R.N.
S. J. CRUMBINE, M.D.
A. T. MCCORMACK, M.D.
EUGENE R. KELLEY, M.D.*

* Deceased.

STUDY OF MEDIA FOR THE ESTIMATION OF BACTERIA IN MILK

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THE CONTROL of milk supplies consists in part in laboratory examinations of milk. The principal feature of these examinations from a hygienic standpoint is the quantitative estimation of the number of bacteria in samples of milk. Although it is recognized that no single method will yield mathematically correct counts, it is necessary to secure an analytical procedure that will furnish comparable figures. This has been attempted by the American Public Health Association through the establishment of "standard methods."[1] It is recognized that these standard procedures are not perfect.

During the past two years considerable criticism has been directed toward the media recommended for bacterial counts and new media or modifications of the "standard" medium have been suggested. It therefore seemed desirable to make a carefully controlled study of certain media to determine whether reported discrepancies were inherent in the standard medium or the result of poor technic, and to obtain comparative data on media other than the standard.

The problem is of importance not only to the public health laboratory which is concerned with the hygienic control of milk supplies as the representative of the consumer, but also to the laboratory of the dairy which attempts to supply milk conforming to certain legal standards. Control of pasteurization also depends to some degree upon laboratory procedures.

Admitting that no plate count gives the actual total number of bacteria in milk, a method which yields the most uniform percentage of the actual number is, of course, the best. The most variable factor in the plate count is undoubtedly the medium. "Standard" agar may vary in consistency, in mineral salt content and, within certain limits, in nutritive value and in hydrogen ion concentration. Merely because one medium gives a higher count than another, is no reason for regarding it as preferable, although it would seem that the medium containing the best nutrient material both in kind and amount and allowing for growth of the greatest variety of milk organisms should be favored. Other factors, such as simplicity and uniformity in preparation, as well as cost, must be considered.

Berry[2] found that meat infusion agar could be diluted to about one-twelfth of its original concentration without materially affecting the count, while the cost was much reduced. Sherman[3] compared counts on plain and lactose agar, finding that the latter gave results 43 per cent higher, with more rapid growth, larger and more easily differentiated colonies. Sears and Case[4] maintained that, in an attempt to lessen the cost of preparation, the standard medium as recommended in 1916 was so reduced in nutritive value that inaccuracies and inconsistencies occurred. They suggested the use of sterile milk dilution blanks to supply the nutritive deficiency. Ayers and Mudge[5] have advocated a milk powder agar which is claimed to give

* Read before the Laboratory Section of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 19, 1925

relatively high counts, large colonies and a qualitative differentiation of types. These claims were substantiated by Parker and Byers [6] and Supplee and Ashbaugh [7] in comparative studies of the A.P.H.A. standard agar of 1920 and the Ayers milk powder medium.

Supplee, Whiting and Downs [8] have also studied variations in bacterial counts as influenced by composition of media and conditions of incubation. More recently, Zoller [9] has suggested modifications of milk powder agar and Frobisher [10] has compared standard agar, lactose agar, milk powder agar and modified milk powder agars. He concluded that the enriched media gave higher counts than the standard agar, with larger and more uniform colonies. He preferred lactose agar on account of its simplicity, cheapness and uniformity in preparation.

During the past few years there has been an increasing use of dehydrated agar, particularly in the smaller laboratories where facilities and staff are necessarily limited. Such a medium should be given a rigid test before it can be wholeheartedly recommended. Furthermore, some demand has been made for a return to the veal infusion agar standard medium. As far as we are aware no attempt has been made toward a mathematical analysis of comparative counts. With these various points in mind we present a comparative study of 5 media on the basis not only of colony counts but of simplicity and uniformity of preparation and economy, together with a statistical analysis of the results.

As a standard for comparison we have used the beef extract agar, as recommended in the 1923 edition of Standard Methods of Milk Analysis. The other 4 media were veal infusion agar, dehydrated nutrient agar (an allowable standard medium), dehydrated peptonized milk agar and Ayers milk powder medium. The hydrogen ion concentration of the dehydrated products was found to be 6.8 as claimed, and this pH value was adopted for the other media. Zoller's modification of the Ayers medium proved to be a great improvement and was used by us.

Each of the media was prepared in 2 liter quantities and stored in 100 c.c. amounts. Fresh media were made every 2 days and tested for sterility. The final pH was checked on each lot. Triplicate plates were made for each dilution of milk on each medium. All plating was done in a glass dust proof case washed out each time with 3 per cent lysol. Plates were inverted and placed in piles of 2 or 3 in a roomy well-ventilated incubator at 37° C. for 48 hours. So-called "spreaders" on the plates were entirely eliminated. Samples of milk were obtained through the courtesy of the Bowman Dairy Company of Chicago. Fifty samples each of raw and pasteurized milk were used.

TABLE I

BACTERIA PER CUBIC CENTIMETER IN RAW AND PASTEURIZED MILK

Medium	Raw			Pasteurized		
	Average	Maximum	Minimum	Average	Maximum	Minimum
Standard	674,600	2,000,000	63,000	18,800	48,000	4,000
Infusion	656,500	2,972,000	100,000	16,450	43,000	3,000
Dehydrated	702,000	2,500,000	123,000	18,210	70,000	2,500
Peptonized	738,000	2,600,000	115,000	25,000	70,000	2,000
Ayers	854,000	4,000,000	250,000	28,430	70,000	6,000

Table I shows the average, maximum and minimum counts for the 50 samples of milk as obtained in the 5 media. The difference between the highest and lowest average counts as shown in this table is about 200,000 for the raw and 12,000 for the pasteurized milk. These differences might or might not be of importance depending upon the use made of the counts. In both raw and pasteurized milk the media rank the same, except that the dehydrated and standard agar have reverse positions in the series with pasteurized milk. These differences are within the limits of error in the work. The Ayers medium invariably gave the highest count

and the veal infusion medium the lowest. The variations as shown in the maximum and minimum counts are considerable but since these represent only single samples discrepancies are not unexpected.

A mathematical analysis was attempted by tabulation of the following: average total counts, average deviations from the average counts, ratios of averages to average deviations, standard deviations and coefficients of variation (see Table II). The average deviation was found by subtracting each daily count from the total average count and obtaining the average of these differences. To compare the media on this basis a ratio of the average count to the average deviation was calculated. The standard deviation was computed by squaring each daily average deviation, averaging the squares and obtaining the square root of this average. This gives a measure of the dispersion of the counts, with somewhat greater weight given to the higher figures. The coefficient of deviation is the ratio of the standard deviation to the average count. The lower this coefficient the more dependable the count should be.

The figures as shown in Table II indicate that for samples of raw milk the most consistent results were obtained on the standard and veal infusion media with the dehydrated nutrient agar closely following. The Ayers and veal infusion media were the best on the basis of the figures for the pasteurized milk. If we use the coefficient of variation as the best single measure of the reliability of the bacterial counts, the infusion medium would rank first, the standard and the two dehydrated media second with practically nothing to choose between them, and the Ayers medium last. This rating, of course, represents only one factor, that of uniformity of results. Other factors will be considered later.

Table III shows the relation of the counts on the various media as compared with the standard meat extract medium, calling this medium 100. The figures were obtained by calculating the value for each of the 50 counts on raw and pasteurized milk and averaging the results. It should be noted that the average counts on raw milk are practically the same for the standard and infusion media; are somewhat higher on the dehydrated agars; and considerably higher on the Ayers medium. With pasteurized milk the counts are the same on the standard, dehydrated and infusion media, 48 per cent higher on peptonized milk agar and nearly twice as high on the Ayers medium.

TABLE II

MATHEMATICAL ANALYSIS OF MILK COUNTS

Medium	Average	Average Deviation	Ratio avg. to avg. dev.	Standard Deviation	Coefficient of Variation
Raw Milk					
Standard	674,600	321,740	2.09:1	429,760	0.63
Infusion	656,500	325,000	2.02:1	416,000	0.63
Dehydrated	702,000	350,800	2.00:1	477,900	0.68
Peptonized	783,000	435,000	1.80:1	573,000	0.73
Ayers	854,000	446,000	1.91:1	675,000	0.79
Pasteurized Milk					
Standard	18,800	9,700	1.94:1	12,000	0.66
Infusion	16,450	8,100	2.30:1	9,750	0.59
Dehydrated	18,210	10,100	1.80:1	8,900	0.72
Peptonized	25,000	13,800	1.81:1	16,790	0.67
Ayers	28,430	13,400	2.12:1	16,270	0.58

TABLE III

AVERAGE PERCENTAGE COUNTS

Medium	Raw Milk	Pasteurized Milk
Standard	100	100
Infusion	98	99
Dehydrated	119	101
Peptonized	147	148
Ayers	184	196

It was thought that there might be some significant variations in the media depending upon the actual range of counts. Accordingly the 10 highest and 10 lowest counts on the standard meat extract medium, both on raw and pasteurized milk, were selected and the figures compared with those obtained on the other media for the same samples of milk. Table IV summarizes these data.

The figures indicate that high counts on both raw and pasteurized milk are reasonably consistent but very great variation is evident on samples giving comparatively low counts.

TABLE IV

COMPARISON OF HIGH AND LOW COUNTS

Medium	Average of 10 High Counts		Average of 10 Low Counts	
	Raw	Pasteurized	Raw	Pasteurized
Standard	1,342,000	37,830	179,300	5,910
Infusion	1,005,800	24,010	271,300	7,590
Dehydrated	1,074,500	34,950	438,300	8,500
Peptonized	1,315,200	35,300	312,600	10,230
Ayers	913,000	38,100	438,000	18,820

Although there is variation in the numerical figures obtained in the use of these 5 media, the mathematical tests applied do not give data sufficiently definite to serve as a basis for judging the value of the media for routine milk analysis. Other factors such as simplicity and uniformity in preparation, cost, and ease in counting and differentiating colonies must be considered.

The preparation of standard agar is not difficult, although the final medium is subject to variation depending upon the brands of the ingredients and the care and skill of the laboratory worker. The agar plate is clear and translucent but the colonies are not uniform in size, many being very small, and differentiation of type is impracticable. The cost is low in a well equipped laboratory.

From the standpoint of preparation and use, veal infusion agar can receive no commendation, while the cost is high.

Dehydrated nutrient agar is easy to prepare and the laboratory can depend upon obtaining a uniform product. The agar plate is clear and the colonies more uniform in size than with the medium prepared in the laboratory.

Dehydrated peptonized milk agar has all the advantages of the dehydrated nutrient agar with the added one of being a better culture medium. The colonies are large, quite uniform in size and the plates can be counted without the aid of a lens. Some differentiation of bacterial types may be made. In our hands, triplicate plates gave more uniform counts than with any other medium. The cost of both the dehydrated media is greater than that of the standard agar, but where equipment and technical laboratory help is limited these media are well worth the difference.

Ayers milk powder agar is rather troublesome to prepare, although not expensive, and does not give as uniform results as the other media. The plates are not clear but the colonies are uniformly large and some type differentiation is possible.

SUMMARY

We have attempted to analyze the bacterial counts obtained on 5 media from a series of samples of raw and pasteurized milk, particularly as regards uniformity of results. In our hands, veal infusion medium ranked first in this respect, with meat extract agar and the 2 dehydrated media second. Ayers milk powder medium was less satisfactory. However, the actual differences obtained were small and we believe that any of these media will yield results of sufficient uniformity so that they may be satisfactorily used in milk counts. However, the counts obtained on the various media are not entirely comparable with each other.

When other factors are also considered in the selection of a medium, and we believe they should be, our results lead to the conclusion that standard meat extract agar, dehydrated nutrient agar and dehydrated peptonized milk agar are equally satisfactory and that a public health or dairy laboratory may choose any 1 of the 3 depending upon individual laboratory conditions, with the expectation of obtaining consistently good results. Ayers milk powder agar is satisfactory in many respects, but the counts are hardly comparable with those from the other media. Our principal objection is the

somewhat cumbersome method of preparation. Veal infusion medium is not recommended.

Finally, we believe that discordant results in counting bacteria in milk by the agar plate method are due to errors in technic and are not inherent in the methods or media recommended.

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SEWAGE SLUDGE*

ACTIVITY in the investigations of the disposition of sewage sludge and the decided progress made during the year in the data secured impel your committee on sludge to again submit a progress report. The outstanding features of the progress made during the year may be briefly stated:

Increased interest is shown in the use of sewage sludge on the part of the agriculturist and fruit grower.

There is a remarkable demand upon the part of golf clubs, flower growers and fertilizer manufacturers for the organic nitrogen in the sludge when reduced to dry basis so that it can be properly handled.

The cities of Baltimore and Rochester are disposing of the sludge from their hydrolytic and Imhoff tanks, after air drying, to neighboring truckers and fruit growers who haul it away and pay something for each load. The North Shore Sanitary District near the city of Chicago is paid $100 per year by a farmer for the privilege of removing and using the dried Imhoff sludge from the drying beds of three separate sewage disposal plants which serve a very considerable population.

Activated sludge, when properly prepared by drying and grinding, is sought by many different types of users.

The Milwaukee Sewerage Commission, with the coöperation of the Sanitary District of Chicago, has, for the past two seasons, distributed prepared activated sludge, free of cost, for trial to many golf clubs in the Detroit, Cleveland, St. Louis, Minneapolis and Milwaukee districts—fifty-seven in all. In the majority of cases, the clubs have tried to get sufficient sludge this year for their total fertilizing needs, but little being available their requests could not be complied with. The Milwaukee Sewerage Commission has also distributed to many flower growers in Illinois, Michigan and Wisconsin the prepared sludge with the result that a very considerable tonnage has been requested by this type of user. For 18 months truckers in large numbers have been attempting to secure activated sludge without success because it has not been manufactured in sufficient quantity.

* Progress Report of the Committee on Sludge, Presented to the Sanitary Engineering Section of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 22, 1925.

The investigations so far conducted on the fertilizer value of activated sludge have been broad and have embraced the feeding of many types of ground growing staple crops, such as corn, tobacco, potatoes, tomatoes and cereals. In most cases, the several types of ground and crops have satisfactorily responded. For the growing of lawn and bent grass it has been especially successful. It proves better than sodium nitrate in that a surplus does not burn the grass and there is a very decided residual value in the sludge which is not in the nitrate. It is better than manure in that the plant food is more concentrated and contains no harmful seed to inoculate the soil, or injure the grass.

The best market, however, is with the fertilizer manufacturer who uses it as a filler to supply the organic nitrogen needed in the best complete mixture. Synthetic and mineral nitrogen are great plant foods and are widely used by the fertilizer manufacturer but they are not equal to organic nitrogen which has for years been largely supplied by the packing house industry in the form of tankage and which, since the war, has been converted largely into live stock food.

The production of activated sludge to date has been very small and has been practically confined to the Calumet and Maywood sewage plants of the Sanitary District of Chicago and to the city of Houston plant. These plants have produced approximately 40 to 50 tons per month, although not continuously.

From information in the hands of the committee, the city of Houston has sold some of its sludge for $12.00 per ton f.o.b. cars at the sewage works. The Sanitary District of Chicago has received for its sludge in 100-pound bags $22.50 per ton f.o.b. cars near works.

The Milwaukee Sewerage Commission will not be ready to begin the production of the dried sludge from its plant until late in October.

The indications are that from 1¼ to 1½ tons of dried sludge will be produced from one million gallons of Milwaukee sewage, or approximately 100 tons per day. Provision has been made to store the dried sludge through the off season (from May to October) in a substantial storage building of 25,000 tons capacity. By this means the sludge can be held for delivery when the demand is greatest and the price the highest.

For the purpose of dewatering the sludge and preparing it as a commercial product, demonstration plants have been conducted at Pasadena, Houston, Milwaukee, Indianapolis and Chicago. These plants have embraced pressing, filtering and drying. The McLaughlin filters were used at Houston and Pasadena; the Worthington, the Berrigan improved press, and the Simplex press at Chicago; the Oliver Continuous Filter at Pasadena, Milwaukee and Chicago and the American Continuous Filter at Indianapolis, and, on a small scale, at Chicago.

Milwaukee has built and Indianapolis has under construction the most complete dewatering plants. The Oliver Continuous Filter and the Atlas Dryer are to be used at Milwaukee, and the American Filters and Bonat Dryers are being installed at Indianapolis. It is felt that the problem demands considerably more research before standardizing upon any one type of dewatering plant or equipment.

Sulphur, alum and sulphuric acid have been successfully used in assisting the coagulation of sludge preceding filtering or pressing. Chicago appears to secure the best results from alum, Houston from sulphur, and Milwaukee from sulphuric acid. Recently, Chicago has experimented with ferric chloride which appears to be more efficient but more expensive, so that its use may not be warranted except in an emergency.

Neither in Chicago nor in Indianapolis has it been found necessary to artificially heat the sludge prior to dewatering during the winter months, whereas heating has been found necessary in Milwaukee to get the most efficient results.

It therefore appears that each situation

of considerable magnitude must, at present at least, be given separate study and investigation before any final determinations as to the best method for dewatering the particular sludge in question. As yet, recovery on a small scale appears too costly a procedure.

Several tests are now being conducted upon the possibility of digesting activated sludge by means of single or two-storied tanks with considerable progress.

As a temporary measure, Indianapolis is digesting activated sludge in the same tanks with primary sludge produced by fine screens and rapid settling. This mixture of raw and activated sludge when inoculated with partially digested sludge produces very rapid gasification and complete digestion within a relatively short period. In the design of the dehydration plant at Indianapolis, provision is made for the drying of digested sludge which is expected to be the ultimate means of disposing of primary sludge composed of fine screenings and sludge continuously removed from preliminary settling tanks. The drying plant at Indianapolis is practically completed. The development of the sludge filter plant, except for the installation of one full-sized American continuous unit, will be delayed until the economic value and the cost of dehydration have been more completely established.

Dr. Imhoff in the Ruhr District, and the Sanitary District of Chicago are discharging the excess activated sludge into the sludge or bottom chamber of Imhoff tanks where it settles and mingles with the digesting primary sludge. Digestion has taken place. While additional sludge capacity is required in the primary tanks, this combination of Imhoff tanks followed by activated sludge may have possibilities and offer a way of solving the sludge problem both for small and large installations. Further investigation is needed.

Dr. Imhoff proposes, in the activated sludge plant he is now designing in the Ruhr District, to dispose of the sludge in primary digestion tanks and utilize the gases formed by the digestion process as power for compressing the air for the purification process. If this proves successful, it will be a long step forward both in reducing the cost of purification and the cost of disposing of the sludge.

In England, sewerage works engineers have been interested in the commercial utilization of sewage sludge for many years. The late Mr. Garfield at Stratford used to ship the dried sludge to Florida in shiploads. Mr. Hart, in Leeds, has pressed the precipitated sludge and sold it to the neighboring farmers. Mr. Watson at Birmingham has also carried on commercial disposal of digested sludge.

A portion of the precipitated sludge from the Davyhulme Works at Manchester has been reduced to dryness on steam heated steel plates and sold to farmers. Birmingham has recently been disposing of the sludge from its drying beds by delivering it to a nearby fertilizer manufacturer who uses it as a filler in mixed fertilizer. An abandoned aerodrome furnishes a convenient factory. Many other English cities are using some method of disposing of their sewage sludge to increase the value of neighboring farms.

In the larger works, the practice of dumping wet or press cake sludge upon land and plowing it in is gradually being abandoned in England although for the small works it is still a very common method.

Engineers throughout the world are still seeking the most advantageous way of disposing of the most troublesome product of most types of sewage treatment. If methods are finally discovered for economically, and perhaps profitably, disposing of the sludge from both large and small activated sludge plants, this process may become more available than it now is. However, additional research is needed in the problem of sludge disposal both as to procedure and equipment.

The thought is somewhat prevalent that if the activated sludge process of sewage

treatment becomes broadly used on a large scale, the production of the fertilizer from this source may cause a decrease in selling price. This may be a possibility, but as the demand now exists there are few sources from which this demand for organic nitrogen can be supplied. If, after continued trial, the activated sludge product meets the requirements it now promises to meet, the indications are that a market can be found at a price which should cover the costs of preparation.

At the present juncture, the committee urges caution in the consideration of plans for new projects. As a rule, financial considerations are foremost. While Milwaukee, Chicago, Indianapolis, Houston and other cities are carrying on research and are operating large works, the knowledge obtained must be applied to a given problem, whether large or small, by experienced engineers. The economies effected, if any, may prove available only on the large scale.

The committee realizes that this report may be deserving of criticism because of the prominence given to activated sludge. The reason is that this character of sludge is of recent origin. Much research has been and is being done to determine the best methods for handling it and those particularly interested are entitled to such facts as the committee has been able to accumulate.

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INDUSTRIAL ANTHRAX*

THE COMMITTEE has endeavored to bring the statistics on anthrax morbidity and mortality up to date as far as possible, by means of questionnaires to state registrars and health departments, and by reference to the U. S. Bureau of the Census *Mortality Statistics*. The latter, however, only include up to 1922. Their figures occasionally give deaths not acknowledged by state authorities and the latter often report deaths not included in the census bureau records.

At best, anthrax data are far from complete, very few states being able to give definite information as to the source of infection, and some recording deaths only. Some states giving information as to cases and deaths will report more deaths than cases, owing to differences in the methods of collecting these data. One state goes to the extreme of professing inability to separate human from animal anthrax in their report, reporting 653 anthrax cases in 6 years, and merely stating that some of them must be animal infections. More or less complete reports have been obtained from 34 states.

The present records of cases and deaths by states and by years from 1919 to September 1, 1925, indicate that anthrax is indigenous in a number of areas in the United States. California, Illinois, Pennsylvania, Louisiana, Mississippi, and Massachusetts report one or more cases every year, and Delaware, New York, New Jersey, Wisconsin, Colorado, Kansas, Ohio, Tennessee, and Texas report cases in 5 or 6 of the 7 years. In Louisiana and Texas, there has been a distinct increase in anthrax in recent years. The former state reported 8 cases in 1924 and 11 in the first 8 months of 1925, most of them being traceable to animal contact. This state was reported to have lost a million and a half dollars

* Report of the Committee on Industrial Anthrax, presented to the Industrial Hygiene Section of the American Public Health Association at the Fifty-fourth Annual Meeting at St. Louis, Mo., October 21, 1925.

from animal anthrax in 1924. Texas reported 12 cases in 1921, 5 in 1922, 14 in 1923, and 32 in 1924. Mississippi reports 68 cases in 1924 as against 34 in 1923, but does not seem to be able to differentiate between human and animal anthrax. Utah reports many cases of animal anthrax in recent years, but human anthrax is not reportable so they have no records of cases in man.

New Jersey and Pennsylvania, two of the most important tannery states, report more anthrax in 1924 and 1925. New Jersey reported no cases in 1924, but 15 cases in 8 months of 1925. No indication as to source of infection is given in their report. Pennsylvania reported 9 cases in 1924 and 11 in 8 months of 1925, but Pennsylvania, with its large tannery, hair and wool interests, can always be counted on for a number of cases.

Three states reporting anthrax in 1924 (8 cases in all) report none in 1925, but 5 states reporting none in 1924 report in all 25 cases in 8 months of 1925.

The second tabulation in our report gives the cases by years and by sources of infection, and is most interesting. The most striking part of this table is the large number of cases reported with no suggestion as to source of infection. There seems to be no decrease in the percentage of cases so reported, and of

TABLE I

ANTHRAX CASES AND DEATHS REPORTED IN 33 STATES. TO SEPT. 1, 1925

	1919		1920		1921		1922		1923		1924		1925		7 yr. total	
	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D
California	14	1	8	1	7	1	5	2	14	4	2	0	5	0 to July 1	55	9
Colorado	3	3	1	1	2	0	1	1	1	0					8*	5
Connecticut	1	0	1	1	0	0	3	0	0	0	0	0	1		6	1
Delaware	1		2		3	2	2	1	2		2	1	1		13	4
Florida		0		0		0	1	1							1*	1
Illinois	2	2	9	4	7	3	4	4	1	1	3	0	3	1 to July 1	29	15
Indiana	0	0	0	0	1		1		0		0		0		2	0
Kansas	0	0	1	0	2	1	2	2	0	0	2	2	0		7	5
Kentucky	0	0	0		0		1	1	0		0		0		1	1
Louisiana	3	3	8	4	6	2	4	1	4	0	8	2	11		44	12
Massachusetts	22	2	13	4	6	0	3	1	5	0	8	0	5		62	7
Maine	1	1	1	0	1	0	0		0		0	0			3	1
Michigan	2	2	5	5	1	1	1	1							9*	9
Minnesota	2	1	7	3	1	1	0	0	0	0	0	0	2		12	5
Mississippi (448)				(37)		(39)		(27)		(34)		(68)				(653)
Missouri					16		18	1	7	0	3	1			44*	2
Montana	2	0	2	1	0	0	1	0	1	0	0		0		6	1
Nebraska	0	0	1	1	1	0	1	1	0		0				3*	2
New Hampshire	1	0	2		0		0		0		0		0		3	0
New Jersey	1	1	5	7	11		2	1	3		0		15	to July 1	37	9
New York	14	11	24	5	9	6	8	5	6	2	0		6		67	29
North Carolina	0	0	0		1	1	0		0		0		0		1	1
Ohio	2	2	1	1	4	4	3	3	2	0	5	3	0	0	17	13
Oregon	1	1	0		0		1								2	1
Pennsylvania	15	1	20	3	8	5	22	2	19	2	9	1	11	1	104	15
Tennessee	1	1	1	1	1	1	2	2	0	0	4			cases first reported, 1924	9	5
Virginia	0	0	0	0	1	1	2	2	1	0	0	0	0	0	4	3
Vermont	1	1	1	1	1	1	0	0	0	0	0	0	1	0	4	3
Washington		0		0	1	1	0	0							1	1
West Virginia		0		0		0	1	1							1	1
Wisconsin	3	2	2	0	1	0	2	2	1	1	1	1	0	0	10	6
Maryland	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1
Wyoming		0		0		0	1	1							1	1
Texas	0	0	0	0	12	1	5	2	14	0	32	5	2	0	65	8
Total	92	35	115	43	104	32	97	38	82	11	79	16	63	2	632	177

D=Deaths
C=Cases
*=Reports for less than 7 years

Utah reports many cases of animal anthrax. Mississippi report does not separate human from animal anthrax so their figures are not included in total.

TABLE II

SOURCES OF ANTHRAX INFECTION

	1919	1920	1921	1922	1923	1924	1925
Leather industry	35	43	16	18	16	8	11
Wool	5	2		1	2	3	4
Hair and brush	5	13	1	8	5	5	3
Animal contact	2	10	7	5	9	18	17
Shaving brush	10	11	12	7	4	3	2
Not stated	35	36	68	58	46	42	26

course these cases, if fully reported, might change materially the other percentages.

Tannery anthrax as indicated by the reports from Pennsylvania, Massachusetts, New Jersey, New York State, and Delaware fluctuates with the fluctuation of industrial conditions, but shows no indication of decreasing. As yet it is practically all due to handling foreign raw materials as is all industrial anthrax. However, there seems to be a distinct tendency to increase of anthrax infection from animal contact and, as this indicates, of animal anthrax. So we must be increasingly on guard against the introduction of anthrax-infested animal products into industry. The time may well come when we will be forced to regard as suspicious and needing disinfection all hides, skins, hair, and wool from certain districts in the United States, as we do now from many foreign areas.

Shaving brush infections are the only infections that appear to be on the decrease, and this slight decrease may be more apparent than real, although shaving brush infection seems to be reported in states not reporting any other sources. This is due, of course, to the widespread publicity as to the dangers of shaving brush infection, and the wide distribution of the hazard, even though numerically the type of infection is of minor importance, except in the New York City reports.

It is hoped that the publicity given the subject by this reporting, and by the repeated requests for statistics will result in more interest in anthrax infections and a more complete reporting of cases and sources of infection.

HENRY FIELD SMYTH, M.D., DR.P.H., *Chairman*
V. S. CHENEY, M.D.
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STANLEY H. OSBORN, M.D.

Appointment of Dr. Kirkwood—Dr. R. C. Kirkwood, Fellow A.P.H.A., who during the World War was Chief of Medical Service at the Army General Hospital, Fort Bayard, New Mexico, has been appointed Epidemiologist, State Board of Health, State of Utah, with headquarters at Salt Lake City.

The Human Factor—A New Bulletin on Industrial Relations—The Massachusetts Society for Mental Hygiene in November issued the first number of a new bulletin which it will publish regularly as a definite part of its program. This new bulletin will be called "The Human Factor," and will be expressly gotten up for the busy executive in business or industry, and will be largely concerned with the innumerable every-day problems of industrial relations.

This new publication, which will generally consist of from 4 to 6 pages, will at first be issued quarterly; it will be sent free to members of the Massachusetts Society for Mental Hygiene and on request to all residents of Massachusetts who by occupation or profession are interested in the human factor in business or industry. It will be under the editorial direction of Dr. Henry B. Elkind.

Coöperation Between Psychiatrists and Lawyers—Warfare, long and bitter, is said to have existed between members of the legal and medical professions with regard to medico-legal problems and especially those concerned with mental disorders and the criminal law. In order to form a basis for getting these two important professions together in the interests of the common welfare, A. Sheldon Glueck, Ph.D., LL.M., contributes a tentative program of coöperation between psychiatrists and lawyers to the October, 1925, issue of *Mental Hygiene*. Dr. Glueck suggests (1) a standardized psychological-psychiatric terminology; (2) study of the system of mental examination of accused persons before the trial; (3) standards for qualifications of experts and elimination of hypothetical questions; (4) consideration of the status of psychological tests in the courts; (5) coöperation regarding the legal tests of the irresponsibility of the insane; (6) study of methods of discharge of inmates of institutions for the criminally insane; (7) examination of inmates of county jails and similar institutions for minor offenses; (8) scientific aid to the courts; and, (9) development of out-patient departments of psycopathic hospitals.

THE YEAR'S WORK IN THE FOOD AND DRUG FIELD*

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THE FOOD AND DRUGS Section of the American Public Health Association is interested in the public health aspect of food and drug problems. Its work involves the fields of chemistry, bacteriology, sanitary engineering, pharmacology, and other branches of scientific endeavor whose research adds to our knowledge of the uses and the results of the uses of foods and drugs. Consequently, any survey of work in the food and drug field must, of necessity, include reference to work which technically would be considered under some special branch of organized science.

The relation of infected foods to illness has always attracted attention among public health workers, irrespective of their specialized fields. The past year has not been free from food-borne infections. An oyster-borne typhoid fever outbreak,[1] occurring in December, 1924, attracted nation-wide attention and practically resulted in general disuse of this article of food. The relation of oysters to typhoid has been deemed of such importance as to warrant the separate consideration of this subject in the program of our meeting.

Jordan[2] reported an outbreak of scarlet fever caused by milk-borne infection. Of 55 cases, 38 were definitely shown to be milk-borne and the remaining 17 due to personal contact. An outbreak of 21 cases of typhoid fever was reported by Lumsden[3] at Lincoln Memorial University in Tennessee, due to the use of infected raw milk. Williams[4] reported an outbreak of paratyphoid fever occurring among about 60 infants and young children which was definitely traced to a carrier of *B. paratyphosus B*, who was a milker on a farm supplying certified milk. A paratyphoid outbreak among patrons of a cafeteria was reported by Wade and McDaniel[5] in which the causative agent was a carrier infecting the milk. Nankivell and Kettlewell[6] described an English outbreak whose symptoms were those of acute gastroenteritis with recovery usually within 24 hours.

Spray[7] reported a food poisoning outbreak at West Virginia University as an enteritidis infection. In the past year another outbreak of botulism has been experienced at Solon, Ohio, in which there were 2 cases, both resulting in death due to canned sardines infected with the botulinus organism. A recent editorial[8] in commenting on a report of the British Medical Research Council refers to botulism as "our National problem" and states that botulism is the cause of fully 9 out of 10 outbreaks of food poisoning in this country. The experience of workers in the food control field in this country is decidedly contrary to this statement, as, in their experience, a very large majority of our food poisoning outbreaks are of an enteric type. Savage and White,[9] in discussing the relation of paratyphoid fever to food poisoning, state that "paratyphoid fever is a definite disease caused by *B. paratyphosus B, A*, and possibly *C*. It is never caused by the salmonella strains such as *B. aertrycke* or *B. enteritidis* which are responsible for

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the great majority of food poisoning outbreaks. So far as their experience goes, there is no evidence that genuine *B. paratyphosus B* has ever caused an outbreak of food poisoning of the ordinary gastrointestinal type. It causes paratyphoid fever and nothing else." Other recent investigations in the food poisoning field are reported by Savage and White.[10]

Of interest to all workers in the food field is a recent publication[11] by Esty and Stevenson in which are discussed methods of sampling, and bacteriological examination as well as physical examination of spoiled cans and their diagnosis.

The possibility of food infection resulting from the consumption of raw vegetables and even raw fruits is a question that is attracting increasing attention. A recent study[12] of the bacterial contamination of fresh fruits and vegetables indicates that normal, uninjured fruits and vegetables do not contain living bacteria within their tissues; that pathogenic bacteria may persist on the surfaces under moist conditions for 15 days or more; and that the only satisfactory method which will uniformly kill all pathogenic bacteria is dipping fruits and vegetables for 10 seconds in boiling water or in water which remains above 80° C. during the immersion. James,[13] in a study of the bacterial content of head lettuce, showed that there is a general decrease in the total numbers of bacteria with increasing depth into the lettuce head and that storage at room temperature resulted in a large increase in the bacteria on the outer leaves and a much greater increase on the inner leaves within a period of 4 days. He showed further that the examination of lettuce heads which had been trimmed and washed in the retail market indicated that the contamination was much more generally distributed throughout the head. Another conclusion drawn from the author's experiment was that lettuce stored without washing allowed less bacterial development than was found in head lettuce washed before storing in the ice box.

An interesting occupational disease among food handlers is reported by Kingery and Thienes.[14] It is a cutaneous disorder, commonly known as "fruit poisoning," which appears to be common among the workers of certain canneries of the northwest. Pears have given this trouble and the incidence is as high as 33 1/3 per cent. The symptomatology is that of a rather marked paronychia, characterized by inflammatory reaction pain, and sometimes by the actual loss of one or more nails. A yeast-like organism is the causative agent. An alcoholic solution containing 5 per cent thymol and 2 per cent oil of cinnamon is effective in its relief and the promotion of healing.

The question of the use of chemical food preservatives has been strikingly revived during the past year by the appearance of the British Departmental Report on the use of preservatives and coloring matters in foods.[15] This report recommends the restriction of food preservatives to benzoate of soda and sulphur dioxide and suggests the establishment of maximum limits for these preservatives in the various classes of foods. The full text of the proposed regulations, giving the quantitative limits for these preservatives, has just been announced.[16] So universal is the interest in arriving at a fuller knowledge of the influence of chemical preservatives on health that the International Union of Pure and Applied Chemistry, at its last conference at Bucharest, Roumania,[17] provided for a continuation of the study of antiseptics, especially benzoic acid and sulphur dioxide and their compounds, to determine their limiting quantities, action on foodstuffs and on vitamines, with the idea of submitting a complete report at the next meeting of this congress in 1926.

The recent work[18] of Mallory on the relation of chronic poisoning with copper to hemochromatosis directs attention to the fact that evidence is accumulating to prove that chronic poisoning with copper is the cause of hemochromatosis and that among the possible sources of the poison-

ing are the contamination with copper of food products which have been cooked in copper vessels. He further points out that the symptom complex of this disease requires 15 to 25 years for development and that steps should be taken to prevent copper from getting into liquors and foods, as well as to prevent the inhalation or ingestion of copper dust. Mills[19] points out that the Korean people have continuously consumed food from copper and brass utensils and that there is no evidence in the work thus far done in the Orient to disclose evidences of copper poisoning due to the continuous use of such utensils.

Within the past year, there appeared also the results of an elaborate study on the hygienic significance of nickel[20] in which 3 families, including 12 individuals, were fed for a period of 3 months on foods which had been prepared entirely in nickel utensils. This investigation showed that the preparation of food in nickel utensils is entirely safe, which is in agreement with the large group of foreign investigators. While some nickel was found in the urine during the period of the experiments, the authors found that this amount was too low to be a possible source of kidney damage. Monier-Williams[21] made a careful study of the solubility of glazes in citric acid to determine whether or not harmful amounts of lead might be dissolved from such enamels during the ordinary cooking operations. His conclusion was that on the samples tested by him, most of which were of French manufacture, there was no danger of the ingestion of harmful amounts of lead.

The past year has been notable in the extension of our knowledge of vitamines and of the action of light on the body. Hess,[22] Steenbock[23] and their coworkers have shown that the ultraviolet rays may influence our calcium and inorganic phosphorus anabolism and that substances not possessing antirachitic properties may become activated by irradiation with these rays. In commenting on these discoveries, a recent editorial[24] says: "The linking up of light with food factors and nutrition is a triumph of present-day biochemical research." The recently published book[25] by Ellis and Wells on the Chemical Action of Ultraviolet Rays gives an admirable discussion of the therapeutic use of these rays in the cure and prevention of rickets as well as a thorough survey of the literature. The antirachitic factor is not saponifiable and is, therefore, not in the group of true fats with which it is commonly associated. It is, however, associated with the sterol fraction of the unsaponifiable portion of the fats. The relation of sterols to Vitamin A is splendidly summarized by Drummond.[26] A summary of our present knowledge of the antisterility vitamin, fat soluble E, is given by Evans and Burr[27] who show that the most abundant source of this new dietary factor is in seeds and green leaves, especially wheat germ and lettuce. This vitamin is related to reproduction function and its absence is shown in female rats by their failure to carry their young to term, while in male rats there is a degeneration of the germinal cells of the testicles. Bloor[28] also summarized our knowledge of the fat-soluble vitamins and presented an up-to-date résumé of our present knowledge of the biochemistry of fats. There is also available an excellent but brief statement of our present knowledge of vitamins by Jones.[29]

Cereals have long occupied a prominent place in our dietary. Consequently, the recently published work of Mellanby[30] on the effect of cereals in producing rickets opens up another field of research in his suggestion that there may also be anti-vitamins. Puppies receiving oatmeal with the basic diet developed earlier and more marked rickets than those fed other grains. The most rapid early growths were in the oatmeal fed puppies and these developed severe cases of rickets. He further shows that the detrimental effects of cereals, which become prominent in diets deficient in antirachitic vitamin, can

be overcome by exposure of the animal or the cereal to ultraviolet radiation. He further points out that the agent or agents which interfere with the laying down of calcium in bones is associated with the fatty acids and is in the saponifiable portion of the grain.

The relation of stored foods to their nutritive value is of general interest. Dugdale,[31] in a discussion of frozen, chilled, smoked, dried and canned foods, summarizes the evidence as to changes which are found to have taken place in foods stored for some time, and concludes that there is no ground for apprehension lest the increased consumption of such foods should have ill effects.

Three very recent papers are also of interest. Sherman and MacLeod[32] showed a progressive increase in the total calcium content of the bodies of their experimental animals during growth and that females which had not raised young showed a higher percentage of calcium than males of the same age and inheritance and fed on the same food. Animals receiving too little calcium in their diets lost it from their bodies. The addition of 1 per cent calcium lactate raised the calcium to the normal level.

Hart, Steenbock and their coworkers,[33] experimenting with rabbits on a whole milk-sodium citrate diet, showed the development of an anemia characterized by low hemoglobin and erythrocyte contents of the blood and that inorganic iron added to the basal ration will not of itself correct this anemia. However, inorganic iron in the presence of fresh cabbage or an alcoholic extract of desiccated cabbage or yellow corn meal will prevent or cure such anemia. They also point out the remarkable fact of the apparent well-being and growth of the animals for a considerable period of time although the bloodstream is abnormal.

Myers[34] has shown that in no instance did animals develop better on distilled water than those on hard water, but that the reverse was true under several conditions.

Limitation of our space necessitates the omission of many references in the drug field which have added greatly to our knowledge of the cure and mitigation of disease.

In a popular article,[35] Rettger discusses acidophilus milk as a therapeutic agent and health drink and points out how the establishment of the organism in the intestine excludes other types of intestinal bacteria and that it is of distinct therapeutic value for persons suffering from various ills having their direct or indirect origin in intestinal disturbances. The work of Hall and Shillinger[36] in the development of effective anthelmintics is of special interest to workers in the field of intestinal parasites. The use of the dyes,[37] acriflavine and proflavine as antiseptics and hexylresorcinol[38] as a genito-urinary antiseptic have attracted considerable attention. The recent report of Bastedo[39] on the use and utility of digestive enzymes in therapeutics is of interest in that the conclusion is drawn that such enzymes are of minor importance in therapeutics.

Reference to biological products such as the antitoxic serums for scarlet fever; diagnostic methods for detecting susceptibility to scarlet fever; the use of convalescent measles serum; the study of the physiological action of parathyroid hormone; work on the ovarium follicular hormone, cannot be discussed since these fields may be treated more properly by the Laboratory Section.

An attempt has been made in the foregoing presentation to direct attention to those publications during the past year which have an important bearing on food and drug work. It is regretted that lack of space prevents a fuller treatment of our subject since necessarily many important articles had to be omitted.

A recent editorial in the *Medical Journal and Record* states that our increase of medical knowledge during recent years has come from researches in physiology and biochemistry and that the sciences of bacteriology and pathology largely wait

on biochemistry for their further advancement. It is most encouraging to all workers in the field of preventive medicine to realize the truly marvelous advances which have been made in recent years in the field of biochemistry and it is not a Utopian idea to feel that we can with confidence look to biochemistry, possibly aided by microchemistry, to supply both bacteriology and pathology with material for the elucidation of some of their present problems.

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EDITORIAL SECTION

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UNSHACKLING SCHOOL VENTILATION

ONCE UPON A TIME there were no ventilating ducts in school buildings. The rooms were stuffy and uncomfortable. Analyses of the air showed a high content of carbon dioxide, to which one group of scientists promptly attributed the feeling of discomfort. Another group looked upon carbon dioxide merely as an indicator of more harmful mysterious poisons in breathed air. In order to remove or dilute these substances, ducts were placed in school buildings to increase the circulation of air. This improved the condition slightly but the stuffiness persisted. Someone said "We need much more air. Let us blow air through the building with fans." Blower fans were installed. Laws and regulations were passed requiring an allotment of 30 cubic feet of air per minute for every child.

Sometimes the air stream did not follow the path intended so that more fans were installed to pull as well as to push the air. Sometimes when a window in one room was opened another room would be robbed of its air quota. So it was proposed to have an individual duct from the fan to every room in place of trunk ducts and branches.

A natural consequence of this excessive air flow was a feeling of dryness in the room. Along came the humidifier. Then the presence of dust in the air was observed—hence the air washer to remove dust and humidify at the same time. Automatic control devices for temperature and humidity naturally followed.

By this time the price of the heating and ventilating equipment of a school building had reached a sizable figure. Furthermore, it took a goodly amount of coal to warm this continuous air stream of 30 cubic feet per minute for each child from an outdoor temperature below freezing to 70 degrees indoors. All this heated air did not linger long in the school building but passed right on out into the atmosphere.

In the interest of economy recirculation of air was suggested. Instead of sending all that heated air out of doors why not send it around through the building again? This would save a lot of coal. Of course another way to save would be to cut out the fans and reduce the volume of air, but this idea was not popular. The thought which seemed uppermost was that whatever happened the machinery must be kept going.

This is the roundabout route taken in the search for comfortable schoolroom atmosphere at a reasonable cost. It is like trying to reach Florida from Boston via San Francisco. Such is the lure of machinery and mechanical paraphernalia.

Ever since 1880, physiological investigators have pointed out that temperature is the essential factor in ventilation which governs health and comfort. Hermans, Billings, Mitchell and Bergey, Flügge, Heyman, Paul, Ercklentz, Haldane, Boycott, Pembrey, Collis, Henderson, Benedict and Milner, Winslow, Leonard Hill, and others, have contributed to this subject. They concluded that the thermal factor in ventilation outweighed all other considerations. There are no "mysterious organic poisons" in respired air. Carbon dioxide even when present in an amount ten times that of a badly ventilated schoolroom is not harmful, for the respiratory mechanism of the body provides a factor of safety great enough to cope with wide variations in carbon dioxide content. If a room is hot it is uncomfortable no matter how pure the air is chemically. There is just one thing that will restore comfort, and that is to cool the room. The carbon dioxide content of the air is no measure of the comfort of the schoolroom. Stuffiness is not due to too little air but to too much heat, the effect of which is to cause a swelling of the turbinate bones in the nose, thus constricting the size of the air passages.

In 1923, the New York State Commission on Ventilation, after four years of experimentation, confirmed the findings recorded above. The commission further discovered that window ventilation with gravity exhaust and direct radiation make a perfectly practicable combination for the schoolroom, that this provides less but quite sufficient air change, that it is cheaper to install and cheaper to operate, and provides a cooler, more comfortable atmosphere which makes the pupils less susceptible to colds and other respiratory infections. The peculiar predicament in which we find ourselves is that the laws prevent school children from enjoying the advantages of window ventilation with gravity exhaust. The law which prescribes an air flow of 30 cubic feet per person per minute indirectly specifies a blower, that is, mechanical ventilation, and many cities are actually installing mechanical ventilation with no intention of using it after it is installed. It makes too heavy a drain on the coal pile. The taxpayer thus has to pay out money uselessly in order to comply with the law.

School ventilation is shackled by well meaning but misdirected laws. The time has come when these laws should be repealed.* We should enact new laws in accordance with the findings of the Ventilation Commission. The hope of the future is not more machinery in the basement with the control throttle in the hands of the janitor but facilities within the schoolroom which will permit the teacher to open and close windows easily and enable her to control the heat in the radiator.

Physiologists have shown how the public can get better service with the expenditure of less money. Surely this unique and unparalleled appeal of the sanitarian for the privilege of securing health at the expenditure of less money cannot go long unheeded.

* See resolution on Ventilation, *A. J. P. H.*, p. 1101, Dec., 1925.

THE COST OF NON-FATAL DISEASE

THERE CAN BE no question that the public, and it is to be feared physicians and even health officers, lay too little stress upon the minor ailments. The average human being must be frightened before he will be good. The most striking example of these facts is the slight attention which is paid to ordinary colds and sore throats. In schools and colleges no attention is paid to them

further than a little general advice as to care in sneezing and coughing; students are not excluded from classes, but continue to spread their infections through dirty and careless habits. Here and there studies are made as in Cleveland, Ohio,[1] in Washington, D. C.,[2] and those of Dr. Nesbit, Director of Medical Inspection in the Public Schools in Gary, Indiana. These studies show that the ordinary trivial infections cost the community an enormous sum in the aggregate. The latest report of Dr. Nesbit was made on 14,279 pupils giving an average daily attendance of 10,893.2. The total days of absence were 172,798.5, of which 110,756 were due to illness, there being 47,806 cases. Common colds were given as the cause by 10,364 students, with a loss of 23,272 days; sore throats came next with 5,529 cases and a loss of 12,736 days. There were 1,407 cases of other respiratory infections causing a loss of 9,555 days. Altogether 17,300 pupils were absent on account of these illnesses, with a loss of 39,318 days, or 35 per cent of the total loss on account of sickness. In 570 cases of illness among teachers, 242 were due to such causes, with a loss of 625 days, or 40 per cent of the total time lost.

One cannot read figures of this sort without realizing that preventive medicine has failed miserably when it comes to the so-called trivial diseases, even if we consider them only in this light. We have no ground for estimation of the injury done to the body by these ailments, though we know that they aggravate more serious diseases and without doubt are often the starting point of other conditions which end in permanent disease or death.

The remedy is not clear. Human nature must be made over again. Education will in the long run help, but what professor of public health and hygiene is there who does not at times go to his own classes suffering from cold and sore throat? Most teachers do not have enough assistants to lay up for trivial illnesses, and no one likes to be considered a baby or soft, so for some time at least the prospect is that we will continue the bad habits of the past, coughing, sneezing, and spitting in public places, going into class rooms, churches, theaters, and other places where people congregate, spreading our so-called trivial infections.

[1] *Pub. Health Rep.*, 39, 12:559.
[2] *Pub. Health Rep.*, 39, 37:2345.

THE LEAGUE OF NATIONS AND MALARIA

THE REPORT of the Malaria Commission of the League of Nations is a most creditable volume crowded with information of the most valuable kind. The commission made a tour of many European countries in 1924, in which they studied the epidemiology of the disease, the organization of anti-malarial campaigns, the measures adopted concerning man and those against the mosquito, the protection of houses, the influence of animals, of improvements to the soil, and of population. Their principal work was done in Italy and southeastern Europe, though in Russia they went as far north as Kazan, and took in the Ukraine and Volga areas. Everywhere the commission was received warmly and the various governments and health administrations aided in every possible way. In some of the countries visited, the disorganization following the World War has interfered greatly in public health work, and there is still a lack of personnel as well as money for carrying out measures known to be desirable. Practically every country visited has certain areas in which endemic malaria exists

and has always existed; but from time to time in addition to this endemic malaria, well marked epidemics of the disease occur and spread to localities previously almost or quite free from the disease. Since the war there have been epidemic waves which have demanded attention and special emergency measures.

One of the most striking statements is that during the 25 years which have elapsed since the discovery of the agency of the mosquito in carrying the disease, experiments have shown that while it is the most important link in the chain, many other factors play an important part in the epidemiology of the disease. The spontaneous disappearance of malaria from certain countries in spite of the persistence of conditions favoring its spread, is a striking phenomenon which is not entirely understood. The type of the disease and its severity also undergo changes without the agency of special anti-malarial measures, apparently following general, social, and hygiene movements. We still know practically nothing about the possible changes which may occur in local strains of the parasite, nor the influence on the type and spread of the disease due to the importation of new strains into a locality. The use of the malarial organism in the treatment of general paralysis has already taught us new facts concerning the parasite, and this repeated transfer from host to host either directly or through the mosquito promises to give us much more information.

While the commission states frankly that it is not in a position to suggest any single general plan for dealing with malaria, it does point out certain primary measures which are always indispensable: namely, measures which are limited to malarial individuals and the interior of the houses in which they live. These consist of thorough treatment and after treatment; discovery and treatment of cases and carriers; instruction in the homes and schools concerning the methods in which malaria is spread; the biology and habits of the mosquito; the use of mosquito nets; and the advantage of cleaning, white washing, etc.

The survey shows that quinine is universally used for prophylaxis and treatment, and without the intention of discrediting this great drug, the commission does not recommend the prophylactic use of quinine in infected people, except in special and carefully controlled cases.

The report contains 13 articles by individual writers concerning certain countries and certain phases of the malarial problem, which are called "Annexes." There are a number of excellent photographs. Justice cannot be done in a review. The full report must be read to be appreciated, and even experts in malaria will find not only much that is of interest, but of value.

CONTAGIOUS DISEASE IN 1924

THE U. S. Public Health Service through its *Public Health Reports* keeps us in touch with the contagious diseases of various sorts occurring in the world. The Health Section of the League of Nations, however, has begun the issuance of an annual report which summarizes and compares the prevalence of epidemics from one year to another. The report for 1924 gives data for some 83 countries, 29 in Europe, 17 in Africa, 20 in the Americas, and 16 in Asia and Australasia. The British Ministry of Health has coöperated in verifying the reports for 24 colonies and protectorates. The country which seems to be the least well represented in these reports is South America.

The summary is of interest:

Plague—Plague was more prevalent throughout the world than for 5 years past. Northern India was the chief center of the disease, but there was an increase of cases in Java, Madagascar, Union of South Africa, and the South and Southwestern coasts of West Africa.

Cholera—Cholera was rare except in India where it was more prevalent than for 2 years past.

Yellow Fever—Yellow fever was seen in various parts of Central America, but nothing approaching an epidemic, except to a small extent in Salvador, was observed. It is rare on the Guinea Coast, 18 cases only having been reported from Gold Coast, Dahomey and Nigeria.

Typhus Fever—The great pandemic of this disease which began about the time of the Balkan wars, seems to have terminated. It has been most prevalent in East Central Europe, and there also the decline has been most marked, though it was observed in all epidemic centers.

Relapsing Fever—This disease was confined practically to Russia. The only serious epidemic was reported from Nigeria. From other countries only 546 cases were reported.

Smallpox—This remains the most prevalent of all serious diseases. There was a distinct increase in North America, 51,429 cases having been reported for the United States, approximately double the number for 1923. While the disease was usually mild in type, the virulent type was seen in Minnesota. The prevalence of the disease was as a rule in direct ratio to the enforcement of vaccination.

In Asia the prevalence was about the same as for 1923, but a slight increase occurred in India over the 2 previous years. In Europe there was a general improvement in the smallpox situation, the decrease being most marked in Eastern Russia, the Kingdom of the Serbs, Croats and Slovenes, and Switzerland. England, Wales, and Poland showed an increase, while in Spain the number of deaths was more than double than for 1923. A few cases occurred in Denmark, which is usually free. In Germany only 16 cases were reported, 15 in Prussia and 1 in Baden. There was a marked decline in Greece. In Italy there has been a steady decline since 1919 when the disease reached its maximum, the number of cases for 1924 being the lowest on record.

Enteric Fever—The amount of enteric fever was about the same throughout the world as for the past 3 years. The great decline which has been evident for some years past seems to have ceased.

Malaria—Malaria is still a tremendous problem. Its spread following the World War in certain countries is reviewed elsewhere in this JOURNAL.

Influenza—There has been a recrudescence of influenza in almost all countries, which showed great variation in intensity. In the first quarter in 1924 it was most marked in Western Europe, but the type of disease was less severe than in 1921–1922.

Scarlet Fever—The prevalence of this disease is universal, but the type is mild in many parts of the world, so much so that the reporting of it is not reliable, and the death rate gives no fair indication of its prevalence.

Diphtheria—Diphtheria is still widespread. Since the prevalence of the disease tends to rise and fall at various times, it is hard to judge of the importance of those movements which have been observed.

The report indicates that there has been a slight decline in measles, but since the reporting of this disease is incomplete in all countries, definite conclusions are difficult.

CHRISTIAN HEALING

IT WILL BE remembered that the general Convention of the Episcopal Church held in Portland, Oregon, appointed a committee to study the subject of Christian healing. Bishop Theodore D. Bratton, of Mississippi, was chairman, and a report was made at a recent convention in New Orleans, Louisiana.

As far as it goes, the report is marked by a great deal of sound common sense. It points out that faith finds its appropriate place in coöperation with the law of God, and that God's purposes can be thwarted by man's failure to do his part. Spirit and body react one upon the other and this relationship should be studied by clergymen, psychologists, and physicians together. Where the church undertakes the ministry of healing, the results should be submitted to scientific investigation and diagnosis. Since science advances through experiment, so must the church seek justification for the practice of healing through experiment and experience. Personal problems are pointed out as having been particularly susceptible to solution by the direction and advice of Christian ministers. Evil and unfortunate habits are recognized as a widespread cause of disease which may be prevented in this way. It is recognized that answer to prayer is conditioned on Divine Will, and failure to be healed must not be construed as showing lack of faith.

It is clearly pointed out that the purpose of Christian healing is rather to reinforce physical and spiritual life and thus to fortify against disease rather than to cure, since much sickness is the result of ignorance or debasement of human nature through lust, avarice, gluttony, etc. Normal life is emphasized and the power of faith to assist in this is made clear.

Proper preparation of the clergy to deal with moral and spiritual problems is strongly advocated. Since the general principles underlying the ministry of healing only are considered, no investigation has been made of existing organizations and the practices of several bodies now working in the field of religion and health. Faith in God and faith in the physician must be blended for the best results.

It is clear that the committee has kept its feet on the ground. There is no comfort in this report for those who would discard the services of the physician and treat everything by religious and pseudo-religious methods. Some will doubtless be disappointed in the briefness of the report and its failure to deal with succinct practices and certain cults. We confess to such disappointment. At the same time, we must be glad that the representatives of a church with such a large membership have not gone in for the occult nor endorsed some of the fantastic ideas which have been put forward within the last few years in the name of religion. The physician can agree with almost everything in the report, unless he be a disbeliever in a Supreme Being or agnostic.

ASSOCIATION NEWS

EXECUTIVE BOARD AND GOVERNING COUNCIL PROCEEDINGS

At a meeting of the Governing Council in St. Louis, it was recommended that a digest of the Proceedings of the Governing Council and the Executive Board be published in the JOURNAL for the information of the members. The business of the Association is frequently considered by both bodies. For instance, the Governing Council has requested the Executive Board when possible to hear first reports of Association committees and refer such reports to the Council with its recommendations. Similarly, matters requiring further study or the expenditure of funds are referred by the Governing Council to the Executive Board. The following résumé, therefore, to avoid repetition, notes only the final action taken and does not include matters already published in the JOURNAL.

The Governing Council with a membership of 70 Fellows is composed of the officers of the Association, the officers of the sections, a representative of each affiliated state society and 30 councillors elected at large. Its function is to establish policies for the Association and for the guidance of the Executive Board; to establish and discontinue sections and maintain coordination among them; to pass on resolutions before they are submitted to the whole membership; to elect Fellows, Honorary Fellows, affiliated societies, the Executive Board, and the officers of the Association; and to receive the reports of the officers and Association committees.

The Executive Board, which is composed of the president, the retiring president, the treasurer and six elective members (9 in all), is the board of trustees of the Association. It directs the Association's work, procures funds, authorizes expenditures and in general carries out the policies of the Governing Council between meetings.

GOVERNING COUNCIL PROCEEDINGS

OCTOBER 18 MEETING

St. Louis Arrangements—The secretary of the local committee reported for the chairman, Max C. Starkloff, M.D., who was ill. He announced that $9,000 had been raised to defray the expenses of the meeting and mentioned the various trips and entertainment which had been arranged. A. J. McLaughlin, M.D., and James A. Hayne, M.D., were appointed as a special committee to draft a resolution of condolence for Dr. Starkloff and to convey to him the sympathy and best wishes of the Council.

Treasurer's Report—The financial statement for September 30 distributed to the Council showed an income for the first 9 months of the year of $46,126 and expenses for the same period of $47,614. The total assets of the Association were $20,471 against liabilities of $5,554.*

Executive Secretary's Report—(Published in December JOURNAL.)

Committee on Public Health Training—The report of the committee will be published in the May issue of the JOURNAL.

Eligibility Committee—The Executive Secretary reported that this committee had held two meetings and had considered the 40 Fellowship applications referred to it by the section councils and the Executive Board, of which it had approved 38. Acting as the Committee on Membership, it had approved the applications of 750 members.

It was recommended that the Finance Committee provide expenses for the attendance at meetings of the members of this committee.

Editorial Committee—The chairman referred the Council to the JOURNAL as published each month in lieu of any other report. He especially requested suggestions, criticisms and material for editorial comment.

Commissioning of Sanitary Engineers—Mr. Fuller reported that the committee had agreed on a bill which would be given all possible support in the new Congress.

Municipal Health Department Practice—(The full report of this committee is published as a supplement to this issue.)

* The Report of the Executive Secretary published in the December JOURNAL gives a more detailed statement of finances for the 12 months ending August 31, 1925, and the February JOURNAL will give the auditor's report for the fiscal year January 1 to December 31, 1925.

Publicity of Proceedings—It was voted to admit the general membership of the Association to the meetings of the Council and to publish a résumé of the Council proceedings in the JOURNAL.

OCTOBER 19 MEETING

Committee on Organization—The report of this committee had been submitted to the Executive Board, amended and approved by it, and was finally adopted by the Council in the following form, and referred to the Committee on Constitution:

1. We are all agreed that extension of organization should be along the lines of organizing and bringing into the Association a number of affiliated organizations.

2. That these affiliated associations shall consist primarily of professional health workers in states, territories, provinces, or other regional groups. Nothing herein shall be retroactive so far as any existing state health societies are concerned.

3. That the form of organization shall provide for the payment of single dues by members of the American Public Health Association, said payment shall include membership in both the local society and the American Public Health Association and shall entitle the member to the JOURNAL.

4. It is suggested that of five dollar memberships, four dollars shall be paid to the American Public Health Association and of ten dollar Fellowships, nine dollars shall be paid to the American Public Health Association, the balance to be returned to or retained by the local association.

5. That affiliation of a state, territorial, provincial or regional organization with the American Public Health Association shall follow upon the request of the local organization when at least one-half of the professional members of the local association are regular members or Fellows of the American Public Health Association, and upon approval of the Committee on Eligibility and the Governing Council.

6. That nothing in the above arrangement shall modify the qualifications for membership or the requirements for active membership and Fellowship in the American Public Health Association.

7. It is the sense of the committee that a recommendation be made to the Committee on Constitution to provide that each affiliated society shall have one representative on the Governing Council with provision for a first and second alternate, only one of whom shall be entitled to vote in the absence of the representative, and that further provision be made in a definite statement enabling us to revoke affiliation when necessary or desirable.

8. It is suggested in providing for a representative on the Governing Council that the one-half referred to in Paragraph 5 be composed of not less than 20 professional workers.

9. This committee recommends to the Executive Board that we favor the regional plan of organization and that we proceed in that direction as rapidly as financial and organization plans permit. As a nucleus there should be four regional districts, one in the Northeast including the Eastern part of the Canadian country, one in the Southeast including Cuba, one in the Southwest including Mexico and one in the Northwest including the Western part of Canada.

Election of Fellows—Thirty-eight applications for Fellowship were approved (see page 1103, December, 1925, JOURNAL, for list).

State Societies—Applications for affiliation were granted to the following state societies: New Mexico Public Health Association, Pennsylvania Public Health Association, Texas Association of Sanitarians.

OCTOBER 20 MEETING

Annual Meeting—It was decided to hold the Fifty-fifth Annual Meeting in Buffalo, N. Y., during October, 1926.

Atlantic City Meeting—The Program Committee reported that seven sessions had been planned on the following subjects: Administrative Practice, Forum, Child Hygiene, Milk, Public Health Training, Industrial Wastes, Health Education Clinic. Other sessions will be arranged in coöperation with the section officers.

Amendments to By-Laws—An amendment providing for Associate Fellows with annual dues of $6.00 was not approved.

Dairy Products—A Committee on Dairy Products representing the Sections—Food and Drugs, Sanitary Engineering, Child Hygiene, Public Health Administration and Laboratory, was authorized to develop a uniform and standard procedure for the necessary protection of the public health in the production, processing and distribution of dairy products. (Note: This committee has been appointed as follows: Professor Henry C. Sherman, *Chairman*, William H. Park, M.D., H. A. Whittaker, H. W. Redfield, Ph.D., Herman N. Bundesen, M.D., and Philip I. Van Ingen, M.D.

Standards—It was voted to instruct the Committee on Constitution to consider the necessary procedure for the adoption of standards by the Association.

OCTOBER 21 MEETING

Resolutions—The Committee on Resolutions reported 13 resolutions of which 12 were approved for submission to the general Association (see page 1099, December, 1925, JOURNAL for those which were adopted).

Constitution—The old Committee on Reorganization discharged in 1922 was reconstituted as the Committee on Constitution.

Sanitary Engineering—The name of the Sanitary Engineering Section was changed to Public Health Engineering.

OCTOBER 22 MEETING

Executive Board—Herman N. Bundesen, M.D., Don M. Griswold, M.D., and E. R. Hayhurst, M.D., were elected to the Executive Board to succeed Drs. Ruhland, Levy and Ravenel.

Coöperation with Other Organizations—Approval was given to the proposed coöperation of the Committee on Roadside Sanitation and Water Supplies of the Public Health Engineering Section with the American Automobile Association, State Sanitary Engineers Conference and other bodies.

The policy was adopted of requiring the approval of the Governing Council or Executive Board for all activities of sections in coöperation with other organizations.

EXECUTIVE BOARD

OCTOBER 18 MEETING

Health Departments and Hospitals—This committee was merged with the Committee on Municipal Health Department Practice.

Definitions—This committee was discontinued and its work referred to the Committee on Handbook.

Forum—This committee, responsible for the Forum Sessions at the Annual Meeting, was continued with the recommendation that its work be correlated with the Committee on Municipal Health Department Practice. (Other important matters considered at this meeting of the Board are covered elsewhere in this issue.)

OCTOBER 22 MEETING

Correspondence Course—The Committee on Public Health Training reported as follows with regard to the request of the Vital Statistics Section for the Association to establish a correspondence course in vital statistics: "It is the opinion of the Committee on Public Health Training that the Association should encourage all public health training of worthy character but that it should not itself engage, either directly or by coöperative participation, in the giving of correspondence courses. Neither should the Association issue certificates or any other form of academic credit for such courses. It should continue its policy of keeping its advertising and news columns open to proper announcements. We believe that the JOURNAL and the sections of the Association should be free to stimulate the demands for such courses, but that neither the Association nor sections should accept responsibility for giving instruction or credits."

This recommendation was approved by the Board as a policy for the Association.

Registration Area—The request of the Vital Statistics Section for funds to assist in the completion of the United States Registration Area by 1930 was referred to the Finance Committee.

Zoning and Health—It was considered inadvisable for the Association to undertake the publication of a monograph on Zoning and Health that had been submitted.

Status of Health Officers—A committee consisting of Herman N. Bundesen, M.D., Emery R. Hayhurst, M.D., and Don M. Griswold, M.D., was appointed to consult with the American Medical Association relative to its regulation for the affiliation of physicians not engaged in private practice.

Certified Milk—A committee was authorized to coöperate with the American Association of Medical Milk Commissions and the Certified Milk Producers Association.

Morbidity Data—The request of the Vital Statistics Section for funds to assist in the systematic collection and publication of morbidity data was referred to the Finance Committee.

Sewerage and Sewage Disposal—Authorization was granted to the Public Health Engineering Section to publish its report on Sewerage and Sewage Disposal Practice jointly with the Sanitary Engineering Section of the American Society of Civil Engineers.

DECEMBER 7 MEETING

Annual Meeting—October 11 to 14 were selected as the dates for the Fifty-fifth Annual Meeting.

National Health Council—At the invitation of the Board, Lee K. Frankel, Ph.D., who is the representative of the Association on the Council and its Chairman, appeared to explain the proposed reorganization of the Council. This will provide for three representatives from each active member organization instead of one delegate and one alternate as at present. Each associate and advisory member will appoint one representative and there will be five representatives at large. Under the new plan the representatives will vote as individuals.

The proposed plan was approved, and the President, the Executive Secretary and Dr. Frankel were designated as the three representatives of the Association if the plan became effective.

Federal Health Service—The President announced the appointment of the following committee authorized by a resolution of the Association at the Annual Meeting: Lee K. Frankel, Ph.D., *Chairman,* M. J. Rosenau, M.D., William H. Welch, M.D., A. J. Chesley, M.D., and A. T. McCormack, M.D. Dr. Frankel reported on the previous activities of an informal group which had been studying the subject of federal health reorganization and stated that in the opinion of this group it would be inadvisable to attempt to secure a federal bureau or department of health at this time. He recommended that legislation should be asked for to give the President of the United States power to transfer bureaus from one department to another and stated that Mr. Tobey of the Institute for Government Research was active in the preparation of a bill for this purpose. The Board approved of Dr. Frankel's committee proceeding in this direction and recommended the affiliation of the Association committee with the informal group above referred to.

American Health Congress—Dr. Frankel asked for the approval of the Board for a plan to establish special exhibits along the Boardwalk at Atlantic City during the American Health Congress. The plan was approved and a committee of three authorized to confer with other organizations and to direct the exhibit of the A.P.H.A.

It was voted to call a special meeting of the Association in Atlantic City May 17–22, 1926.

The Hotel St. Charles was selected as the headquarters hotel for the meeting.

Fellowship Certificate—The certificate which had been engraved by Tiffany & Company was exhibited to the Board and a seal representing a figure kneeling beneath a tree was approved as the Association seal for addition to the certificate.

Public Health Administration Section—An analysis of a list of 267 Fellows of the Public Health Administration Section indicated that 200 or more were health officers or members of health department staffs. A committee of three was authorized to wait upon the officers of the Public Health Administration Section to confer with them relative to the reorganization of this section.

Regional Organization—The Executive Secretary reported briefly the present status in the states and the Board recommended the extension of affiliation where desirable and the offer of assistance to affiliated societies.

Standard Methods—A committee of Professor Edwin O. Jordan, Geo. W. Fuller and the Executive Secretary was appointed to complete arrangements for the translation of Standard Methods of Water Analysis into French, German, Spanish and Portuguese.

Popular Health Instruction—The plan of the Health Education Section to prepare a manual on the technique of popular health instruction was approved with publication of the manual subject to the final approval of the Board.

Syndicated Bulletin—Funds for the experimental promotion of a syndicated public health bulletin previously approved by the Board, were appropriated.

Budget—The estimate of revenue for 1926 prepared by the Executive Secretary, was approved and a budget of $83,000 was adopted for the fiscal year 1926. A supplementary budget of $38,100 for projects for which no funds were in hand was approved subject to the receiving of funds.

Chicago Resolution—The Board considered a news note in the *Journal of the American Medical Association,* which reported a resolution of the Council of the Chicago Medical Society relative to the A.P.H.A., the Chicago society having failed to transmit this resolution to the Association. Dr. Bundesen was requested to make inquiries in behalf of the Association to ascertain their authority for the statements made and the President was instructed to write a brief letter calling attention to the falsity of the statements in the resolution with regard to the policies of the A.P.H.A.

JOINT STATISTICAL MEETING

There will be a joint meeting of the American Statistical Association and the Vital Statistics Section of the American Public Health Association in April, 1926. They will commemorate the twentieth anniversary of the death of Mr. William Alex. King, the first Chief Statistician for Vital Statistics of the Census Bureau. Professor Willcox will present an appreciation of the life and works of Dr. John Shaw Billings, who was so closely related to the work of Mr. King, and Mr. Van Buren of the Metropolitan

Life Insurance Co. will give personal reminiscences and an appreciation of the work which Mr. King did in founding the Registration Area and in laying plans for the adoption of the standard certificate of death in the several areas.

EMPLOYMENT SERVICE

Beginning with this issue of the JOURNAL, help wanted and position wanted advertisements appear in the classified advertising section. The space that has been regularly devoted to the notices on this page will be used for news of the Employment Service of the Association.

This service is conducted for the purpose of assisting members of the Association in locating public health positions and to assist employers in securing trained public health personnel. The Association has been building up a file of its membership who may be available for work of various types, and members are kept advised of vacancies or new opportunities that arise and for which they are qualified. Any member of the Association may indicate a desire to have his name placed on this list by notifying the Association's Employment Service.

The Employment Service has at the present time requests for the following types of workers:

Medical man, experienced in tropical diseases, laboratory methods and sanitary work to serve as physician with an American expedition to Liberia, Africa. Single man under 40 preferred, as no women are being sent. Very attractive salary.

Public health nurse, to do field work at present and eventually take charge of the nursing bureau in an enterprising Florida community. Position pays about $4,000 yearly and transportation furnished.

Associate professor of public health in the medical school of a southern university. Must be experienced in health teaching and be especially familiar with rural health work. Degree of M.D. not essential, although it is preferred.

Medical Director of city emergency hospital. Salary $4,200 to $4,800. Appointment under civil service. Non-assembled examination, consisting solely of investigation of professional record. Apply City Service Commission, City Hall, Milwaukee, Wisconsin.

Members of the Association may secure additional information regarding these opportunities by writing to the Employment Service of the Association, 370 Seventh Avenue, New York City. (See pages XX and XXI, additional opportunities advertised.)

LIST OF NEW MEMBERS

John G. Abele, M.D., Portland, Ore., City Health Officer

Mrs. E. B. Bay, S.M., Chicago, Ill., Technician

Florence Jean Besley, B.S., Baltimore, Md. (Former Teacher of Physiology and Hygiene)

John H. Blanks, M.D., Zion, Ill., Commissioner of Health

Albert L. Brannock, M.D., Pontiac, Mich., Director of Health, Pontiac Public Schools

Ann Calley, R.N., Salem, N. J., Nurse in Charge, Salem Child Welfare Association

W. L. Chenowetz, M.D., Nogales, Ariz., County Superintendent of Health and Department City Health Officer

Rodney E. Cook, Ph.B., Rockville Center, N. Y., Assistant Sanitarian, N. Y. State Department of Health

A. A. Crooks, M.D., Peoria, Ill., Director Health and Hygiene, Peoria Public Schools

J. A. Lopez del Valle, M.D., Havana, Cuba, Chief Sanitary Officer of Havana and Professor of Hygiene, University of Havana

Mary V. Dempsey, Syracuse, N. Y., Statistician, Syracuse Health Demonstration

Arthur H. Dickinson, Broken Hill, N. S. W., Australia, Chief Health Inspector of Broken Hill (Assoc.)

Joel A. Eastman, M.D., Peoria, Ill., Commissioner of Health

Elliott B. Edie, M.D., Uniontown, Pa., Member of Committee on Public Relations of Penna. Medical Society (Assoc.)

George H. Ensminger, M.D., Glen Ellyn, Ill., Health Commissioner

Mary A. Ewalt, R.N., West Alexandria, O., County Public Health Nurse

John H. Feigel, Buffalo, N. Y., Assistant City Engineer

Leslie C. Frank, C.E., Montgomery, Ala., In Charge of Milk Control Activities of U. S. Public Health Service

Dorothy L. Green, M.D., Lansing, Mich., Pediatrician with Bureau of Child Hygiene, Michigan Department of Health

Roy A. Gunter, M.D., Fort Bayard, N. M., Tuberculosis Specialist, U. S. Veterans Bureau

Lorenzo W. Hadley, M.D., Machias, Me., District Health Officer, State Department of Health

Archie L. Haggerty, V.S., Coldwater, Mich. (Former Chief Food Inspector and Veterinarian, Department of Health, Augusta, Ga.)

John M. Haynes, Columbus, O. (Assoc.)

William F. Higby, San Francisco, Calif., General Secretary of the San Francisco Tuberculosis Association

Edward D. Hopkins, Austin, Tex., District Sanitary Engineer with Texas State Board of Health

Lillian A. Hudson, R.N., B.Sc., M.A., New York, N. Y., Assistant Professor Nursing Education, Teachers College, Columbia University.
J. Joaquin Izquierdo, M.D., Mexico City, Mex., Chief of the Smallpox Vaccine Laboratory in the Instituto de Hygiene, Popotla, Mexico
Robert T. Jacobsen, Fargo, N. D., City Engineer
Max Kaufman, St. Louis, Mo., Assistant Health Commissioner
Genevieve Lill, R.N., Wichita, Kans., Supervisor of Health of Wichita Public Schools
Jessie R. Mann, DeKalb, Ill., Teaching Hygiene and Public Health in Northern Illinois State Teachers College
Elliott Mendenhall, A.B., M.D., Dallas, Tex., Director of Health, Dallas City Schools
Frances H. Miner, Louisville, Ky., Director Health and Safety, Public Schools
Paul D. Mossman, M.D., Rolla, Mo., Surgeon, U. S. Public Health Service
Paul R. Neal, M.D., Monroe, La., Director Ouachita Parish Health Unit, Monroe
J. Albert C. Nyhen, Brookline, Mass. (Assoc.)
C. A. Perry, B.Sc., Hurlock, Md., Bacteriologist in Charge of Branch Laboratory No. 3
Anette M. Phelan, Palisades Park, N. J., Teacher of Health Education in a normal school
Sue McFall Powers, B.S., Memphis, Tenn., Superintendent of Schools, Shelby County, Tenn. (Assoc.)
Peter H. Schroeder, M.D., Davenport, Ia., Director Child Welfare, Davenport Public Schools
Herbert Shull, V.S., Texarkana, Ark.-Tex., Food and Dairy Inspector
Hilda A. Simon, M.D., Seattle, Wash., Director Child Welfare Division, Seattle Health Department
Bernice G. Smith, A.B., Providence, R. I., Assistant Bacteriologist, State Department of Health, Hartford, Conn.
Lillian M. Towne, A.A., Brighton, Mass. (Assoc.)
Rose L. Will, St. Louis, Mo. (Assoc.)
John H. Woodcock, Ph.G., M.D., Hendersonville, N. C., County Superintendent of Health, Henderson County
Barnett D. S. Wyllie, M.D., St. Louis, Mo., Supervisor of Health Education, Public Schools of St. Louis

BOOKS AND REPORTS

Development of Our Knowledge of Tuberculosis—*By Lawrence F. Flick, M.D., LL.D. Philadelphia: Published by the author,* 1925. 783 pp. Price, $7.50.

The author has attempted to give in a summary form a more or less detailed history of the development of our knowledge of tuberculosis from the earliest known records that have any bearing on the subject.

There seems to be a disproportional amount of attention given to the work of the various writers and workers in the tuberculosis field from before the time of Hippocrates down to the end of the 19th century, yet it would be quite impossible in a single volume of this size to handle in great detail the contributions made by such men as Villemin and Koch and their contemporaries and the author has not attempted to do so.

Literature on tuberculosis developed since the middle of the 19th century is quite easily available to most readers, but that representing the period previous is not, and the author has included extensive quotations of a most acceptable character from the translations of Littré, Milligen, Kuhn and others, as well as from Hippocrates, Galen, Aretaens, Sylvius, Morton, Bayle, Auenbrugger, Läennec, Villemin, Virchow and Koch.

The author covers the period from the latter part of the 19th century to the present time in a very cursory manner. He does not attempt to abstract the highly important contributions that have been made in scientific research, clinical methods and the organized campaign against tuberculosis, which have made such rapid strides during this period.

Historically, the book should prove interesting to the professional tuberculosis worker. It is of less importance to the untrained reader.

H. R. EDWARDS

Précis D'Hygiène—*Par Jules Courmont, Professeur d'Hygiène à la Faculté de Médicine de Lyon, Avec la Collaboration des Pr. Ch. Lesieur et Dr. A. Rochaix. Troisième Édition. Par Paul Courmont et A. Rochaix. Paris: Masson et Cie, Éditeurs,* 1925. 901 pp. Price, 45 fr.

The first edition of this excellent book appeared in 1913, the second in 1921 and the third in 1925. Jules Courmont, the senior author, and Ch. Lesieur, one of the collaborators, did not survive the war, so that the second and third editions have been prepared by Paul Courmont and A. Rochaix, the latter a collaborator in the first edition. It is one of the series of *Précis Médicaux,* issued by Masson et Cie. The preface of the second edition gives an excellent résumé of what hygiene accomplished for the Allies during the war. Curiously enough, the French and Germans did not realize the value of anti-typhoid vaccine at the beginning of the war, but its power to prevent

the disease was wonderfully demonstrated under the most trying conditions a little later. In France, as elsewhere, the only disease which was not under good control was influenza, against which we were able to do practically nothing. The author states that since the war the control over diseases in France has continued, except in the cases of syphilis and alcoholism, the latter of which has increased.

The book is admirably planned and there is nothing to criticize in the way in which the plan has been carried out. It begins with a consideration of the importance of hygiene and its place in relation to medicine and other sciences. The depopulation of France is next considered, after which a section is devoted to sanitary laws and organization.

The historical method of teaching is much in evidence. With the exception of a short chapter on bathing, in which declarations are made that cleanliness is the basis of all hygiene and that those people who are cleanest have the lowest morbidity and mortality, the consideration of hygiene proper begins with prenatal care and infancy, to which 126 pages are given. In this section is included an excellent consideration of milk, its composition, production, preservation, pasteurization, etc. The only criticism which can justly be made is that the American method of producing certified milk is not given, but European countries in general are far behind this country in this respect.

Although published under the name "Précis" (compendium), the book is a veritable mine of information. It contains an abundance of excellent illustrations some of which are in colors. It is well printed, remarkably free from errors, and of a convenient size. One cannot help wondering how so much information has been put in 888 pages of text. No book on this subject has come to our attention which can be more unreservedly recommended and we trust that an English edition will appear in the near future. M. P. RAVENEL

A General Consideration of Snake-Poisoning and Observations on Neotropical Pit-Vipers—*By Afranio do Amaral of the Serum-Therapeutic Institute, Butantan, Sao Paulo, Brazil, and of the Museu Paulista. Cambridge: Harvard University Press,* 1925. 64 pp., 16 pls. Price, $2.50.

This is the first attempt to assemble in one treatise an account of the poisonous snakes of the Western Hemisphere and bring together what is known of snake poisoning. The author has had a wide experience in the Brazilian Serum Institute at Butantan, as an investigator of these venomous reptiles and of the action of their venoms. This treatise contains a brief account of the geographical distribution of the poisonous snakes, viperine, crotaline, and others; the structure of the poison glands and the mechanism for the implantation of the venom; the nature of the venom, its quantity, toxic activity, chemical composition, physiological action, channels of penetration; types of poisoning; death rate; and treatment. The treatments by scarification and cupping, by ligature, by thermo-cauterization, and by the use of reducing substances such as permanganate of potash are all relatively inefficient as compared with serum treatment, and are often accompanied by serious local results. It is estimated that 5,000 to 10,000 deaths from snake bite occur annually outside of India, where 20,000 annually have been reported. They are preventable by prompt specific serum treatment. The Butantan Institute prepares several polyvalent serums for groups of related venoms. Neutral mixtures (poison-anti-poison) are used for immunizing horses. The ophidic antitoxins are refined by the concentration process and their therapeutic values enhanced thereby. In Sao Paulo, where 2.6 per cent of all deaths were formerly due to snake bite, the use of serums has reduced the fatalities to several per year. C. A. KOFOID

Conserving the Sight of School Children—*New York: National Committee for the Prevention of Blindness, 130 East 22nd Street,* 1925. 46 pp.

Those who have been so fortunate as to keep in touch with the reports of the Joint Health Committee of the National Education Association and American Medical Association, particularly the recent report on "health education," will read with interest the most recent report on "Conserving the Sight of School Children." This study is based on questionnaires made of actual practices of four phases followed in public schools in caring for the eyesight needs of school children: examination methods, follow-up procedure, work of school clinics, and organization of conservation of vision classes.

To use the language of the committee, the study provides the following:

1. A statement of the extent of defective vision among school children in accordance with definitions hereinafter given.

2. Standards for various classes of defective vision constituting health defects.
3. An outline of the duties of teachers, school nurses and trained non-medical examiners, and school physicians in the conservation of the eyesight of pupils.
4. Recommendations of administrative procedures for use in school districts.

The conclusions arrived at, the recommendations made, and the standards for defective eye and vision set up by the committee are quite in accord with the best knowledge and practice at the present time, and should be very helpful to all those interested in the problems relating to the vision of school children. However, one must not lose sight of the fact that in spite of the very evident painstaking care exercised by the committee in the collection and preparation of the material presented in this study, further investigation is still necessary for the correct solution of many of the problems in which this report will be found most useful.

TALIAFERRO CLARK

Medical Education—*By Abraham Flexner. New York: The Macmillan Co.*, 1925. ix+334 pp. Price, $2.50.

An altogether admirable review is given of the historic development and present tendencies of medical education in Europe and the United States, and of the underlying progress of medicine itself with its "curious blend of superstition, empiricism and that kind of sagacious observation which is the stuff out of which science is ultimately made." The book is based on an almost unique knowledge of medical education throughout the world. The subject is handled with sound judgment; and the text has a real beauty of style, and a philosophic background such as has perhaps not been seen in medical literature since the days of Osler.

The problem of special training in hygiene falls outside the main line of the author's argument and is mentioned merely to say that, in the United States, this subject "figures in the main indirectly—in bacteriology and internal medicine, and more important still, in a change of view, gradually perceptible, which tends to permeate the entire medical school with the thought of preventive medicine." Every public health worker, as well as every physician and every teacher of medicine, would profit by reading and re-reading Mr. Flexner's first chapter on the underlying philosophy of medicine and medical education. In the health department, as in the laboratory or the hospital ward, the future depends upon the extent to which superstition and empiricism are dominated by science, "the persistent effort of men to purify, extend, and organize their knowledge of the world in which they live." C.-E. A. WINSLOW

Public Health in Theory and Practice—*By William H. Welch, M.D. The Second William Thompson Sedgwick Memorial Lecture. New Haven: Yale University Press*, 1925. 51 pp. Price, $1.00.

In this little volume Dr. Welch has given us a picture of successive working hypotheses in regard to the causation of disease, from Hippocrates through Fracastorius to Murchison, and on down from Pasteur and the glorious nineties to the present day, and of the ways in which these theories have affected current practice for better or for worse. Needless to say, it is a picture drawn with grace and charm, with breadth of vision and with ripe and kindly judgment. It is good to see it recognized that "it is doubtful whether any more useful working hypothesis concerning the sources of epidemics could have been framed in 1848 than that which guided most of the sanitary activities at that period"; and that "the new public health," of which we are sometimes a bit too boastful, is merely "a widening of the public health program, not a substitution for what it previously embraced." The main lesson of the book, however, "that success in the control of disease is directly dependent upon accurate knowledge of the causation and propagation of disease" cannot be too often reiterated.

The author's warning as to the danger created by the gap between physician and health officer, due to aloofness on the one hand and undue aggressiveness on the other, is also a timely one; and the remedy for this unfortunate situation, as he well says, "is to be sought in the first instance in improvement of medical education, whereby a sense of responsibility for the health of the community as well as of his patients is inculcated and the idea of prevention, not less than that of cure, is impressed upon the minds of the students."

There is probably no speaker on medical and public health topics in America who is so well known and beloved as Dr. Welch. Those who have had the experience know, however, how hard it is to secure a crystallization of his spoken word in written form. The managers of the Sedgwick lectureship have earned the gratitude of all of us by their success in this difficult task. C.-E. A. WINSLOW

Manson's Tropical Diseases—*A Manual of the Diseases of Warm Climates. Edited by Philip H. Manson-Bahr. (Ed. 8.) New York: Wm. Wood & Co.*, 1925. xxx-895 pp. 20 plates in color, 7 in half-tone, 6 maps, 33 charts, and 387 figures in text. Price, $11.00.

This well-known treatise by an eminent leader in the analysis, treatment, and control of the diseases of the tropics has attained its eighth edition, the first six having been the work of the original author. The present edition is extensively revised and somewhat condensed, being shorter than the last by 70 pages. The section on medical zoölogy has been entirely rewritten with the inclusion of much new data on schistosomiasis and the life cycle of the blood flukes. Many new illustrations have been added, including 6 maps which afford at a glance the main outlines of the distribution of the more important diseases of the tropics. As a whole, the illustrations are of excellent quality. The ninth edition will doubtless afford an opportunity for the elimination of the few of mediocre and inferior quality, which mar the work.

A subject so extensive as tropical medicine requires much condensation to compress it within the limits of one octavo volume. This the author has succeeded in doing most admirably. He has drawn extensively upon the varied, prolonged, and intensive experience of British colonial medical services in the tropics and upon the results of the British centers of tropical medical research, especially of the London school. There is a quite natural emphasis upon the parasitological features of tropical medicine, perhaps because of the great activity in this field of recent years.

Pathology, treatment, and prophylaxis are always well presented. The reader who wishes to learn of the work in other countries with equal fullness must look elsewhere, especially for French, Dutch, German, and American contributions to this field. The suppression of yellow fever at Panama is, for example, passed with a single phrase, and the engineering aspects of mosquito control are scarcely mentioned. Public health preventive measures are generally less amply treated than etiology and the therapeutic aspects of tropical diseases.

The book is primarily written for the practitioner rather than the worker in public health and preventive medicine. Deeks and James' pioneer work on black water fever is not mentioned. The complicated flotation method of Lane for hookworm diagnosis is set forth, but the simple method of Kofoid and Barber is not mentioned. Lane's method is accurate as a means for determining the *number* of ova in a stool, but the rapid and certain detection of *cases of infection* is the prime desideratum in private practice, institutional laboratories, and in all survey work. For this purpose the latter method is markedly superior.

The editor expresses his opinion on two matters of practical public health procedure. Quinine prophylaxis in malarious localities is regarded as "at the present, advisable," although he cites the fact that experimentally introduced, sporozoites are not harmed by the therapeutic dose of 30 grains of quinine. The continued use of quinine in the "accustomed doses at the accustomed intervals" for 6 months after leaving an endemic area is recommended for persons returning to Europe from the tropics. He also recommends the treatment of "cyst passers" as a measure for the prevention of the spread of amoebiasis.

C. A. KOFOID

Les Curiosités de la Médicine—*By Docteur Cabanès. Paris: Le François, 91, Bould. St. Germain*, 1925. 330 pp. Paper. Price, 10 fr.

The title of this book does not give one any idea of its contents. The reviewer expected to find an account of the anomalies and monstrosities with which physicians have come in contact, but such is not the case. The human body itself, and then the different parts of the body, are taken up in order. Much interesting history is given which runs all the way from discovery to the poetry and paintings which have been inspired by various parts of the body—the hand, the eye, etc.

Under consideration of the trunk, the invention of the corset and a discussion of its usefulness and harmfulness is included; under the hand the discussion runs all the way from ethnography to methods of hand shaking, and we are told that in America hand shaking is done with such vigor that the women of New York carry fans and bouquets in order to avoid the suffering to which they are subjected by the American hand shake! In considering the head, we are told the story of a soldier who in 1655 received a dangerous wound of the head which exposed the brain. The surgeons in charge told the soldier of his danger, mentioning that his brain was in sight. He answered by requesting them to send a little of it at once to the Cardinal Mazarin since "The

Cardinal tells me a hundred times a day that I have no brains."

The book shows a tremendous amount of research. Facts and anecdotes from every part of the world have been collected and put before us in orderly sequence. It is full of matters of interest which furnish excellent reading, most of which are of little practical value. M. P. R.

Health and Environment—*By Leonard Hill, M.B., F.R.S., and Argyll Campbell, M.D., D.Sc. New York: Longmans, Green & Company,* 1925. 205 pp. Price, $4.20.

This book is a combination of the facts brought out in three of the *Medical Research Council Special Reports,* Nos. 32, 52, and 73, the first two: "The Science of Ventilation and Open-Air Treatment," Parts I and II, and the third: "The Kata-Thermometer in Studies of Body Heat and Efficiency."

The authors point out that their object is not to pamper individuals by giving them luxurious surroundings, but to keep them hardy, fit and efficient workers by proper food and fresh air.

The authors scout the supposed existence of organic impurities in exhaled air, and lay stress on the fact that the oppression felt in crowded rooms is a reaction to the lack of movement in the air and its inefficient cooling and evaporating powers. Some forty years ago Hermann pointed out that the results of bad ventilation were not due to the supposed chemical poisons, but to heat stagnation, and to this point of view we have returned. While they recognize that ozone is one of the most efficient agents in getting rid of trade smells, they point out that in concentration of more than 1 to 10 million parts it acts as an irritant poison, and it has no value as a germicide unless much more concentrated. They admit that ozone is formed in the high atmosphere, but state that the "active oxygen" of fresh country air is not ozone, but nitrogen peroxide, which is probably formed by the action of the ultra violet rays of sunlight.

An excellent chapter is devoted to common colds. They point out the infrequency of colds and ordinary respiratory affections among boys in open air camps and in those who are exposed to great degrees of cold in arctic explorations, and make a strong case for the use of fresh air in the prevention of respiratory diseases. Other chapters on clothing, light and foods are timely. A good deal of space is given to the consideration of the Kata-Thermometer and its use in determining the standards for ventilation and heating. Part II begins with the description of the Kata-Thermometer and gives the reasons which led to its invention. There are numerous tables and an abundance of very good illustrations, a number of them reproductions of photographs.

The book is full of valuable information for those who wish to understand the fundamentals of hygiene, and contains many excellent facts concerning personal hygiene. It is written with force and clarity and can be recommended as a valuable addition to the library of all interested in public health. M. P. RAVENEL

Tumors and Cancers—*A Biological Study. By Hastings Gilford, F.R.C.S. With an introduction by Sir Frederick Keeble. London: Selwyn & Blount, Ltd.,* 1925. xii+703 pp. Price 42s. net.

The author accepts Hoffman's contention that cancer is on the increase at a rate not to be explained by improved diagnosis and increased longevity, citing specifically the data on increase in cancers of the breast and tongue, organs in which recognition is easy and correct diagnosis relatively certain. His theory of the disease is that cancer is intrinsic and a disorder of development favored by degeneracy, idleness, and excess. Cells which prematurely complete their developmental cycle, as for example embryonic remnants, are roused into regressive activity by mechanic, chemic, or actinic stimuli. Susceptibility is increased by senescence, by disuse of the alimentary system and of the reproductive organs, the latter especially in women. The retrograde influences which are now weakening the fabric of civilized nations due to ignorant and unscientific philanthropy, multiply degenerates and provide inferior human material. Racial degeneration, ease and luxury all contribute to the conditions favorable for the individual incidence and statistical increase of cancer. The author pleads for a change in the methods of the investigation of cancer, in which the study of its pathology shall be made subordinate to a study of its biology. By this diversion of cancer research he hopes for insight into the means for avoiding and preventing this scourge of mankind. The book deals with the sources, genesis, causes, nature, ecology, prognosis, prevention and non-surgical treatment of cancer, largely from the biological point of view. All persons interested in preventive medicine will find much to stimulate their thinking on fundamental principles in its pages. C. A. KOFOID

Social Pathology—*By Stuart A. Queen and Delbert M. Mann. New York: Thomas Y. Crowell Co.* 690+xxi pp. Price, $3.50.

Notwithstanding serious fallacies in the analogies which have been set up between society and an organism, the authors take it for granted that society is like a living thing in certain important respects, only more so. That is to say, the student cannot read very far without discovering that the various aspects of life have to do with one another in a very intimate way and that the interdependencies in society are even more intricate than those in a single individual.

The book is divided sharply into four parts dealing respectively with the pathology of the family; the economic aspects of social disorganization and personal demoralization; the health aspects of social disorganization and personal demoralization; and conclusions.

All health officers and others working in the field of health promotion should be no less interested than sociologists in the material presented in Part III. One cannot read very far in this part without being impressed with the many factors that contribute to ill-health and with the many kinds of consequences that may follow from ill-health. Each chapter in the book begins with two or three concrete cases which bring out graphically the dependence of the individual upon his heredity, his education, his home environment and the economic medium in which he finds himself. On the other hand, the authors lead the reader to see the inevitable results of a personal situation in the lives of others, near and remote, and the reactions upon personality and upon future well-being and happiness. Skillful use is made of significant statistical material rather by way of reinforcing and elucidating the argument than as raw data for the inductive formation of generalizations.

This part of the book includes special chapters on tuberculosis, diseases of the heart, the crippled and disabled, the blind and the deaf, nervous and mental deficiency, and alcoholism and drug addiction. Throughout the book, however, the kind of ill-health which is included under the term "personal demoralization" is discussed in various connections, as industrial accidents, fatigue, illegitimacy, homeless old age, prostitution, unemployment, etc. The relation to disease of many factors that are often dealt with as though they were "purely social" or "purely economic" can be escaped only by those who are content to study the special phases of the health problem as though the organism could be kept in repair by observing a restricted set of rules. We are coming to see more and more that advice on diet, for example, has to take into account budgets and wage scales; that the wise counsel to avoid worry cannot operate either in a vacuum or in the breasts of human beings distracted by oppressive fears and organic disturbances.

There is one aspect of social morbidity of which the authors are constantly aware, but which they do not discuss in a separate subdivision of their book, namely, the disintegration of the community that comes from conflicts of interests and purposes which are rationalized by relics of outworn creeds and superstitions. One of the serious obstacles to the effective utilization of our scientific knowledge regarding the health of the human organism lies in the multiplicity of absurd dogmas that still dominate the minds of vast numbers of people. The authors do, indeed, refer to the maladjustments of individuals and groups due to ignorance, to the exploitation of partisanship and prejudice; and they insist upon the need of a broad educational program as a means for restoring population to greater stability. With other serious students of social problems, they come to the realization of the need for a scientific attitude on the part of the public for the sake of our larger health. Thus (page 644), "This broader education will include: (1) research, getting the facts; (2) publicity, presenting the facts; (3) discussion, joint consideration of the facts; (4) social action in the light of facts, (a) popular support of existing agencies that are effective, (b) legislation that is needed to provide better machinery for dealing with maladjustments and to prevent their occurrence."

The book is prepared for the use of college students and contains suggestive "projects for further study" and a bibliography at the end of each chapter. The form of the book will not, however, stand in the way of those who wish to make use of an excellent survey of those factors in modern life which furnish the most urgent and the most interesting problems for the men and women of the immediate future.

B. C. GRUENBERG

How Our Bodies Are Made—*By R. M. Wilson, M.B., Ch.B. London: Henry Frowde and Hodder & Stoughton,* 1925. Price, 5s.

As stated in the preface, this little book is for very young people. It is written in simple

language well adapted for this class of readers, and illustrated in a manner which the youngest child can understand and appreciate. Indeed, we consider the illustrations the best we have ever seen for children. They not only clarify the descriptions, but make use of everyday objects, which every child understands and in which every child is interested. For example, the course of air into the lungs is illustrated by aeroplanes; submarines are used to show the course of blood; food ships to show the route and disposition of food; drums to illustrate the sinuses concerned in the resonance of the voice; telegraph wires to show the passage of sensations to the brain, while the special senses are likened to Boy Scouts reporting their observations to the Scout Master, the brain.

Accuracy of statement is not sacrificed to the attainment of simplicity. In addition to anatomy and physiology, the proper use and protection of the functions are well explained and illustrated. Though intended for young readers, and written in a style which must prove fascinating to them, it appeals also to older persons. Altogether we consider it the best book for young children that has come to our notice, and hope for it a wide circulation, since a grounding in the facts of which it treats will prepare the reader to live happily and efficiently. M. P. RAVENEL

The Biology of Population Growth—*By Raymond Pearl. New York: Alfred A. Knopf,* 1925. xiv+260 pp. Price, $3.50.

Professor Pearl's new book is perhaps the most important of his many notable contributions to biometry during the past few years. It deals exclusively with the concrete problem indicated by the title, beginning with a review of the author's earlier work on the fruit fly and on human populations which has led him to the conclusion that under a given set of external conditions the growth of population follows what is known as the logistic curve showing a gradual increase at first, then a more rapid increase and finally a slackened rate becoming asymptotic at a definite maximum. Important new data are included in this volume from a study of the statistics of the native population of Algeria which shows between 1860 and 1920 a practically complete curve of this type representing the adjustment of this population to the new conditions created by the French occupancy. These studies seem to establish beyond any question the validity of the logistic curve and to show that concentration of population tends to diminish the rate of growth of the population in question according to a very definite law. The latter part of the book is devoted to another apparently independent phenomenon, the decrease in population growth which is correlated with high social status and Pearl's studies suggest that this second correlation is intimately associated with fundamental sexual activity. The conclusions drawn seem well supported and are of the first importance to the student of social problems. They are incidentally considerably more cheering than the predictions of East and others since they indicate the existence of fundamental biological laws of adaptation which promise to protect the world against anything like catastrophic over-population. C.-E. A. WINSLOW

Personality and Health. A Talk to Business Women on Efficiency—

The Elements of Pep. A Talk on Health and Efficiency—*Both by William S. Sadler, M.D., F.A.C.S. Chicago: American Health Book Concern,* 1924 and 1925. 128 pp. and 142 pp. Price, $1.50 each.

The first of these books designed for women stresses the fact that health must underlie personality and business energy. It consists of four parts: the first deals with personality, under which subject self-confidence, self-control, systematic habits, etc., are considered; the second is devoted to the well-known principles of hygiene, fresh air, foods, bathing, exercise, etc.; the third is devoted to the signs pointing to impaired condition; and the fourth deals largely with the emotional factors which play such a predominant part in the character of women. An appendix gives a series of exercises illustrated by good line drawings.

The second book is also divided into four parts, which take up practically the same subjects as those in the first, though differently arranged and differently labeled. This volume contains two appendices, one giving a table of the caloric value of foods, and the other a short account of the ductless glands and their functions.

Both books are written in a pleasing popular style, well adapted to the public for whom they are intended. In some cases we are inclined to think the idea of popularity is carried a little too far, as when we are told that mild types of anemia may be cured by injecting "vegetable iron" with a hypodermic syringe. It is also stated that when the hemoglobin (which is

made synonymous with iron) is down as low as 90 you cannot feel well, and the situation is serious when it falls to 80 or below. We also believe that too much stress is laid on the caloric value of foods, and we deprecate the modern fashion of teaching the regulation of diet according to its caloric value. We believe that the use of fresh foods, rich in vitamins is more essential to the average person than the matter of the caloric value of the food. Few people suffer from malnutrition as far as calories go, but many people suffer from evils easily corrected by an abundance of fresh vegetables and vitamin-containing foods. The discovery of vitamins has shown us that man does not live by calories alone. M. P. RAVENEL

Youth in Conflict—*By Miriam Van Waters. With Foreword by Ethel S. Dummer. New York: Republic Publishing Co.*, 1925. 293 pp. Paper. Price, $1.00.

Little doubt will remain in the mind of the reader after he has finished this book as to Dr. Van Waters' competency to discuss juvenile delinquency and its problems.

In Part 1, the conflicts in the home, school, industry and community are considered under "The Problem of Delinquency," 12 cases being presented to show the range of material found in "A Day in the Juvenile Court." Part 2 discusses "The Adjustment of Delinquency," the chapters on "Mental Hygiene and the Adjustment of Delinquency" and "A Community Program" being of especial interest to mental and social hygienists.

The book is recommended to social workers because its point of view is that of the social worker; it is recommended to public health workers because of its mental hygiene aspects.

E. H. B.

Five Years of Social-Medical Activities in the Kingdom of Serbs, Croats and Slovens, 1920–1925—

This recently issued account of the social-medical activities is unusual because of the scarcity of reading matter and the profuseness of illustrations and photographs. The division of the kingdom into administerial departments and the location of the social-medical institutions is first shown, after which a brief account of the program, principles and extent of the work is given. This consumes only 12 pages, the remainder of the report consisting of some 250 interesting pictures showing the various departmental activities. The report is printed in English and French in addition to the language of the kingdom.

E. H. B.

BOOKS RECEIVED DURING NOVEMBER, 1925

A GENERAL CONSIDERATION OF SNAKE POISONING AND OBSERVATIONS ON NEOTROPICAL PIT-VIPERS. By Afranio do Amaral. Cambridge: Harvard Univ. Press, 1925. 64 pp. XVI pl. Price, $2.50.

LES CURIOSITES DE LA MEDICINE. By Dr. Cabanès. Paris: E. Le Francois, 1925. 330 pp. Price, 10 fr.

DIRECTORY OF PSYCHIATRIC CLINICS FOR CHILDREN IN THE UNITED STATES. New York: Joint Committee on Methods of Preventing Delinquency, 1925. 99 pp. Price, $.50.

COMMONWEALTH FUND PROGRAM FOR THE PREVENTION OF DELINQUENCY. Progress Report. New York: Joint Committee on Methods of Preventing Delinquency, 1925. 47 pp.

HEALTH THROUGH PREVENTION AND CONTROL OF DISEASES. Thomas D. Wood, M.D., and Hugh Grant Rowell, M.D. Yonkers, World Book Co. 122 pp. Price, $1.00.

BIRTH CONTROL. Compiled by Julia E. Johnsen. New York: H. W. Wilson Co. 369 pp. Price, $2.40.

TOXICOLOGY OR THE EFFECTS OF POISONS. By Frank P. Underhill, Ph.D. Philadelphia: Blakiston, 1924. 292 pp. Price, $2.25.

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WORLD WAR. Vol. XV. Part Two. Medical and Casualty Statistics. Prepared under direction of Maj. Gen. M. W. Ireland, Surgeon General, by Maj. Albert G. Love, M.C. U. S. Army. Government Printing Office, 1925. 1,368 pp.

SUBMUCOUS ENDOCAPSULAR TONSIL ENUCLEATIONS. Excerpts from Clinics of Charles Conrad Miller, M.D. Chicago: The Oak Press, 1925. 218 pp.

TEXTBOOK OF PHYSIOLOGY. By Wm. D. Zoethought, Ph.D. 2nd ed. St. Louis: Mosby, 1925. 616 pp. Price, $4.50.

MEDICAL HEREDITY. By William Browning, M.D. Baltimore: Norman, Remington, 1925. 250 pp. Price, $4.00.

INSULIN AND ITS USE IN DIABETES. By J. J. R. Macleod and W. R. Campbell. Baltimore: Williams and Wilkins, 1925. 242 pp. Price, $4.00.

TRANSACTIONS OF THE SEVENTH PAN AMERICAN SANITARY CONFERENCE OF THE AMERICAN REPUBLICS. Held in Havana, Cuba, Nov. 5–15, 1924. Washington: Pan American Sanitary Bureau, 1925. 284 pp.

CONFERENCE OF SOCIAL WORK. Fifty-Second Annual Session held in Denver, Colo., June 10–17, 1925. Chicago: University of Chicago Press, 1925. 733 pp.

WHY WE BEHAVE LIKE HUMAN BEINGS. By George A. Dorsey, Ph.D., LL.D. New York: Harper, 1925. 512 pp. Price, $3.50.

CHALK TALKS ON HEALTH AND SAFETY. By Walter F. Cobb. New York: Macmillan, 1925. 243 pp. Price, $.80.

SOURCE BOOK IN HEALTH AND PHYSICAL EDUCATION. By Thomas D. Wood, A.M., M.D., and Clifford L. Brownell, B.S. New York: Macmillan, 1925. 590 pp. Price, $2.50.

DENTAL INFECTIONS, ORAL AND SYSTEMIC, Vol. I, DENTAL INFECTIONS AND THE DEGENERATIVE DISEASES. Vol. II. By Weston A. Price, D.D.S. Cleveland: The Penton Publishing Co., 1925, 703 pp., Vol. I; 471 pp., Vol. II. Price, $20.00 per set.

HEALTH DEPARTMENT REPORTS

IRA V. HISCOCK

Seattle, Wash.—The work of the department of health and sanitation and an account of the vital statistics of Seattle are set forth in the 1924 report which is handsomely bound in blue cloth covers. An index at the beginning of the 95-page report is helpful, and this is followed by a list of the officers of the department.

On the basis of an estimated population of 327,637, a crude death rate of 10.1 per 1,000 population is recorded. The infant mortality rate of 45 is creditably low. Regular weekly infant clinics are held in six outlying districts of the city, in addition to another well baby clinic at the Bon Marche established in 1924 by the health department.

In his report to the mayor and city council, the health commissioner properly calls attention to the enormous task and cost of garbage collection and disposal ($511,787) now borne by the health department.

Among the interesting tables containing data on tuberculosis is one which shows that 18 of the 19 deaths of children under 10 years of age (11 under 5 years) from this cause were meningeal in character. It is stated that most of these cases were undoubtedly acquired from some active case in the child's immediate environment and that it is useless to talk of the control of tuberculosis unless some method can be devised to keep the active open case from intimate home contact with the fertile susceptible soil—the child. A table of deaths from tuberculosis, classified by age, shows that 118 of the 197 deaths occurred among persons not over 40 years of age, 104 being among males, and 93 among females.

Spokane, Wash.—The combined 31st and 32nd annual reports of the health department of Spokane for the fiscal years ending December 31, 1922 and 1923, contain three noteworthy features. Data are given early in the report which show the total population, school population, city area, city wealth, city water supply connections, and the amount of water consumed, number of houses connected with the sewer, public park acreage, and other interesting facts. Classified expenditure tables indicate that this city of 104,573 people in 1923 expended for the work of the health department and hospital approximately 54 cents per capita. An excellent chart for infant mortality shows a fairly steady decline in deaths of infants under 1 year of age per 1,000 living births, from 115 in 1905 to 48 in 1923. Other important tabular material is included in the report, which would be much more valuable, however, if accompanied by explanatory text or comments.

New Bedford, Mass.—New Bedford's 45th annual report of the board of health for the year 1924 notes two low records of mortality, a general death rate of 9.3 per 1,000 population, and an infant mortality rate of 77.9. A decrease is noted in the number of deaths from all the principal causes, except for heart disease and lobar pneumonia, for 1924 as compared with the averages for the preceding 5 years. The population of this city has increased from 41,000 in 1890 to 136,966 in 1924.

Early in the year, rules governing the production and sale of milk for New Bedford were revised to become operative January 1, 1925. The present regulations require pasteurization of all milk sold in New Bedford except that from tuberculin tested cows which contains not more than 50,000 bacteria per c.c. During the year there were made 2,725 inspections of the 500 dairy farms in the vicinity.

A classified expenditure table indicates a total expenditure by the health department of approximately $2.20, but of this amount, $.68 were expended for garbage collection and disposal. The report contains detailed statistical tables, including interesting comparative tables of mortality and population extending over a long period of years.

Province of British Columbia—The 29th report of the provincial board of health of British Columbia contains 65 pages, 7½ x 10½ inches in size, bound in light green covers, and printed in 8-point type. Although not so easily read as some reports, because of the small type, certain features are of interest. The message of the health officer to the provincial secretary contains the following pertinent comment: "As regards the medical profession, we hope that we will in time be able to say for the pro-

fession in British Columbia what was said in regard to the profession in Denmark, in a report made to the Rockefeller Foundation, that in Denmark every doctor is a public health officer, and every public health officer is a doctor."

In connection with the anti-tuberculosis campaign, a travelling diagnostician in tuberculosis is maintained to coöperate with the members of the medical and nursing profession, and address public bodies in all parts of the province.

A report is included of the Cowichan health center, which supplies nursing aid for a district covering some 600 square miles, including the city of Duncan. The population is approximately 6,000, not including the labor employed in the lumbering industry. In all, over 3,300 visits were made by two nurses to homes in the district, and of these 1,075 were bedside nursing visits, and 484 were tuberculosis and other welfare visits. All babies known by the nurses to be living in the district are visited as soon as possible after birth, and monthly from then on as long as possible, 864 such visits having been made during the year. A well baby clinic is held once a month in the Women's Institute Rooms in Duncan. All children attending schools are examined yearly by the different school medical officers assisted by the nurses. Prizes were awarded for the best poster made by rural school children, illustrating a health talk given by the nurse during the year, the best health book telling and illustrating the story of "Good Health," and the best essay on a health subject.

Memphis Milk Supply—For a community occasionally to take account of stock of its health equipment and of various factors having an influence on health is a wholesome sign of progress. Surveys of this character may be made either by local experts or by specialists from outside the community itself. Each plan has its virtues and each its limitations. Memphis, during the past couple of years, has employed both methods.

One of the interesting reports from Memphis is the result of a study of the milk supply by J. J. Durrett, M.D., Superintendent of Health, and C. L. Isley, Jr., Assistant Superintendent, with chart illustrations by W. G. Stromquist, Sanitary Engineer. The Mayor, Hon. Rowlett Paine, who is also Commissioner of Public Affairs and Health, has manifested an active interest in the study.

Introductory statements call attention to the nutritive value of milk, and increased demand for the product by all races and groups of people. Then follows an historical outline of the development of milk control in Memphis. The board of health report for 1894 indicates that prior to that year some milk inspection work had been done by the sanitary officers. During the year 1895, samples of milk were collected from milk wagons but the method of analysis is not indicated. Milk ordinances are discussed, and a copy of the local ordinance which was drawn up after about four years of study of Memphis conditions is appended to the recent report.

At present, Memphis derives its milk supply from over 500 dairies, readily accessible to inspection. In 1908 the daily consumption of milk amounted to about 0.5 pint per capita, while in 1924 the amount had increased to 0.72 pint. Approximately one-half the supply is pasteurized. "The rapid increase in the quantity of milk consumed is the result of improvement in quality." A small amount of milk is sold through retail groceries at 10 cents per quart, but the bulk of store sales is at 12 cents per quart, while the "real milk supply" of Memphis is delivered at 15 cents per quart. A bonus of 15 cents per 100 pounds, or approximately 2 cents per gallon, is paid for milk containing less than 500,000 bacteria per c.c. at the time of delivery to the plants. The bacteria counts made by the Department of Health determine the payment of this bonus. All cattle in the herds supplying milk to the city of Memphis are required by ordinance to be tuberculin tested. Bacteriological examinations of samples of milk were first made during the year 1908. A steady downward trend of bacteria counts in distributed milk is noted to date. In 1923 the department began the publication of milk scores. Each month the milk score of every distributor is published on the society page of a daily paper.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

ANDERSON, C. M. Use of a Suction Apparatus for Bleeding Rabbits. *J. Lab. & Clin. Med.*, 11:183–184 (Nov.), 1925.

Illustration and description of an apparatus which practically exsanguinates a rabbit with one puncture of the heart, yielding 90 to 100 c.c. of blood.

AYCOCK, W. LLOYD and EATON, PAUL. The Epidemiology of Infantile Paralysis. The Relation Between Multiple Cases in the Same Family. *Am. J. Hyg.*, 5:724–732 (Nov.), 1925.

A study of the time interval between multiple cases of infantile paralysis in 235 families, indicating that "a large proportion of the so-called secondary cases arise from a common source with their respective primary cases." The findings indicate the incubation period in man averages 14 days.

BEARD, J. HOWARD. The Prevalence of Goiter in Illinois. *Illinois M. J.*, 48:306–311 (Oct.), 1925.

Out of 15,154 physical examinations of high school graduates distributed over Illinois, the mean average of thyroid enlargement for a five-year period was 24.5 per cent for women and 4.6 per cent for men. No material difference was found in the prevalence of goiter in rural and urban sections.

BIBLIOGRAPHY ON THE DETECTION OF PHENOLS IN WATER SUPPLIES. *J. Am. W. W. Assn.*, 14:348–351 (Oct.), 1925.

A list of 34 selected journal articles on methods for detecting phenols with particular reference to their possible application to the analysis of public water supplies.

BILHUBER, GERTRUDE. Health Habits of Rural Children Not of Highest Grade. *Nation's Health*, 7:748–749 (Nov. 15), 1925.

Discussion of a survey of the health habits of 621 rural school children in Washtenaw County, Michigan, as to nutrition, care of teeth, cleanliness, rest and recreation. Physical defects, many of which were preventable, were noted in 78.8 per cent of the children.

BLAKE, FRANCIS G., and TRASK, JAMES D. The Treatment of Scarlet Fever with Antitoxin. *Boston M. & S. J.*, 193:659–665 (Oct. 8), 1925.

Defining the indications for treatment with respect to time and dosage and the therapeutic effect of antitoxin in toxic scarlet fever, toxic and septic scarlet fever, and post-scarlatinal sepsis.

BROWN, MAUD A. The Class-Room Teacher's Part in Health Education. *Child Health Bull.*, 1:89–93 (Nov.), 1925.

Pointing out some fundamental differences between the part the nurse and teacher play in the health education program. The teacher's chief health interests are in the subject matter and in the habits and environmental conditions of the child.

COE, H. E. Centers of Endemic and Prevalent Disease in China. *U. S. Nav. M. Bull.*, 23:368–371 (Nov.), 1925.

Report of part of a study of diseases prevalent in China, which was undertaken to determine the possibility of transmission of these diseases to the United States.

CRAMPTON, C. WARD. The Prescription of Exercise and Diet. *Med. J. & Rec.*, 122:612–614 (Nov. 18), 1925; *Ibid.*, 122:659–662 (Dec. 2), 1925.

A discussion of some of the work the health physician must do after he has made a health examination of the patient, with particular reference to the prescribing of diet and exercise.

DICK, GEORGE F., and DICK, GLADYS H. Therapeutic Results with Concentrated Scarlet Fever Antitoxin. *Jour. A. M. A.*, 85:1693–1695 (Nov. 28), 1925.

Results of experiments show that the antitoxin is of practical therapeutic value and if given in adequate amounts early shortens the course of the disease and lessens the number of complications and sequelae.

DOCHEZ, A. R. Problem of Respiratory Infections to be Investigated. *Nation's Health*, 7:736–737 (Nov. 15), 1925.

Presbyterian Hospital of New York City has sufficient funds to permit an extensive study of the bacterial cause of common colds and the development of a vaccine from such organisms.

DUBLIN, LOUIS I. Statistical Aspects of Organic Heart Disease. *New York State J. M.*, 25:986 (Nov. 1), 1925.

Discussion of the death rates for organic diseases of the heart according to the experience among the industrial policyholders of the Metropolitan Life Insurance Co. Illustrated by tables and charts.

GARLAND, JOSEPH. A Handbook for Health Examinations by Physicians. *Boston M. & S. J.*, 193:947–967 (Nov. 19), 1925.

A handbook prepared for the Committee on Public Health of the Massachusetts Medical Society describing the general technique of health examinations. Records, personal history, the physical examination and special procedures discussed.

GAUTHIER, AIMÉ. Anti-Typhoid Vaccination. *World's Health*, 6:426–431 (Oct.), 1925; *Ibid.*, 6:475–477 (Nov.), 1925.

A continuation of the subject (*A. J. P. H.*, Oct., 1925), citing examples of the results of anti-typhoid vaccination and discussing methods to be employed for generalizing vaccination.

HARRIS, LOUIS I. Occupational Hazards—Fatigue, Work and Rest. *Med. J. & Rec.*, 122:605–608 (Nov. 18), 1925.

A brief presentation of a variety of conditions of interest in connection with the periodic health examination from the viewpoint of the industrial background.

JOHNSON, CHARLOTTE. Unit System Efficient in Handling Communicable Diseases. *Nation's Health*, 7:741 (Nov. 15), 1925.

To avoid cross infection in hospitals, small units of two to four beds can be managed satisfactorily under proper supervision.

KEISTER, WILLIAM S. Public Health and the Medical Profession. *Illinois M. J.*, 48:300–302 (Oct.), 1925.

"There seems to be no legitimate reason for physicians and health officers to disagree, for both desire to do what is best for the welfare of the public, and neither desires to encroach upon the work of the other but rather to assist each other."

KELLY, ROBERT LEE. Clinical Study of Kahn Precipitation Test and Kolmer Complement-Fixation Test. *Arch. Dermat. & Syph.*, 12: 720–728 (Nov.), 1925.

In running a Kahn precipitation test and a Kolmer complement-fixation test on the same serums in 110 cases, 105 were found to agree, which indicates a high degree of sensitivity and specificity for both tests.

KINLOCH, J. PARLANE. Outbreak of Paratyphoid Fever Due to Infected Ice Cream. *Med. Off.*, 34:191–192 (Oct. 31), 1925.

Interesting account of a paratyphoid fever outbreak, due to bacillus paratyphosus B, resulting in 23 cases. Discussion of symptoms, source of infection and the bacteriological investigation.

LEIBOFF, S. L. The Effect of Heat on the Heart Extract Used as Antigen in the Wassermann Test for Syphilis. *J. Lab. & Clin. Med.*, 11:122–129 (Nov.), 1925.

Description of a method for preparing an antigen at high temperature. The beef-heart used "may be boiled or even heated in the autoclave under 15 pounds pressure for an hour without impairing the antigen obtained by extraction with alcohol."

MCCULLOUGH, JOHN W. S. Full-Time Health Officers. *Canad. Lancet & Prac.*, 65: 240–246 (Dec.), 1925.

A discussion of full-time health officers in the United States, Canada and Great Britain with reference to administration, salaries, tenure of office and state or federal aid for local health administration.

MILLER, K. E. A Demonstration at Tarboro, North Carolina, of a System for Sanitary Control of Milk Supplies of Towns and Small Cities. *Pub. Health Rep.*, 40:2461–2471 (Nov. 6), 1925.

An account of the procedure adopted in providing Tarboro with a safe milk supply, the situation there being similar to that in other towns and small cities which are in need of sanitary milk supplies. Special reference made to the operation of a municipal pasteurizing plant.

NICOLL, MATTHIAS, JR. Some Problems in Public Health Administration. *Jour. A. M. A.*, 85:1527–1528 (Nov. 14), 1925.

Discussion of salaries, tenure of office and political appointments and the difficulty experienced by communities in securing qualified health administrators and coworkers.

ROGERS, SIR LEONARD. Climate and Disease Incidence in India, with Special Reference to Leprosy, Phthisis, Pneumonia and Smallpox. *J. State Med.*, 33:501–510 (Nov.), 1925.

A brief review of past work of the author on the incidence of certain diseases in relation to meteorological data, with a discussion of some new work on the relation of smallpox incidence to rainfall and humidity. Illustrated by charts.

ROBINSON, R. W. Health Activities in the School Program of a County. *Am. Phys. Ed. Rev.*, 30:482–488 (Nov.), 1925.

A presentation of what is being done in Bradford County (Pa.) schools, in school sanitation, health inspection and supervision, physical and health education to meet the need of a program of school health.

SLOAN, E. P. Prevention of Goiter. *Illinois M. J.*, 48:290–293 (Oct.), 1925.

Correct and impartial surveys must be conducted before great progress can be made in prevention. The correction of nutritional deficiencies and control of infections are the basis of prevention and largely constitute the medical treatment of goiter.

SPALDING, ALFRED BAKER. Mortality Rates of Carcinoma of the Uterus in California. *California & West. Med.*, 23:1297–1299 (Oct.), 1925.

The total cancer mortality in California averages about 8½ per cent or about 4,500 cancer deaths annually, of which the genital organs furnish 14½ per cent. Prognosis for early cancer of the uterus is good, but in advanced cases the outcome is fatal.

STENBUCK, F. A. A Simple Device for Hastening Filtration Through Berkefeld Filters. *J. Lab. & Clin. Med.*, 11:189–190 (Nov.), 1925.

Description of a device for expediting the filtration of colloidal solutions where both air pressure and vacuum are available. Illustrated by diagram.

TATCHELL, SYDNEY. Hygiene and Industry. *J. Roy. San. Inst.*, 46:231–236 (Nov.), 1925.

Consideration of the hygienic conditions of the factory and workshop, especially the aspects of the problem concerning the sanitary engineer and the architect.

TWORT, FREDERICK W. The Transmissible Lysin and Its Action on Dead Bacteria. *Lancet*, 209:642–644 (Sept. 26), 1925.

Experiments conducted show that lysin acts on both living and dead bacteria, but is produced only in the presence of living organisms.

WHITEHEAD, H. Milk and Pasteurization. *J. Roy. San. Inst.*, 46:247–255 (Nov.), 1925.

Showing why "a safe continuous supply of raw milk for the general public cannot be produced" and why controlled pasteurization with a certain standard of cleanliness for milk before pasteurization should be made compulsory.

WINSLOW, C.-E. A. The Place of Public Health in a University. *Science*, 62:335–338 (Oct. 16), 1925.

An outline of the development of the Department of Public Health at Yale University, showing how its organization, functions and interrelation with other departments of the university give the public health student a sound training.

WYCKOFF, JOHN. The Organization of the Cardiac Clinic. *New York State J. M.*, 25: 995 (Nov. 1), 1925.

General presentation of the functions of the cardiac clinic and the processes of diagnosis and treatment. Diagrams given showing the relation of a cardiac clinic to outside agencies, and the internal organization of one clinic.

LABORATORY NOTES

C. C. YOUNG*

A New Method for the Concentration of Bacilli in Tuberculous Milk—Out of 30 samples of tuberculous milk, 26 were positive microscopically by the use of the following concentration method: To 10 c.c. of milk in a centrifuge tube provided with a rubber-capped screw top, 0.5 c.c. of trypsin solution was added. The tubes were incubated at 56° C. for 3 hours or 37° C. for 6 hours; after cooling, to each tube 5c.c. of ether were added, the cap screwed firmly and the tube shaken thoroughly at least 200 times, and subsequently centrifuged for 20 minutes at 4,000 revolutions per minute. The liquid now consisted of 3 layers, the ether containing dissolved fat at the surface, a clear fluid below, and, between the two, a gelatinous disc which contained all the acid-fast bacteria. A platinum loop was inserted into the lower clear layer and a loopful of the gelatinous disc removed to a slide. The preparation was smeared with a drop of distilled water and allowed to dry at room temperature. When dry the slides were placed without further treatment into alcohol and ether for 2 hours at room temperature, and then stained by the Ziehl-Neelsen method.—Douglas and Meanwell, *Brit. J. Exper. Path.*, 6:203 (Oct.), 1925.

Observations on d'Herelle's Bacteriophage—The author, in a study of a "strain" of bacteriophage of d'Herelle's isolation, develops a method of quantitative enumeration in some detail. The errors inherent in the method using the highest dilution of bacteriophage in broth which will inhibit growth are pointed out, and a method involving the plating of the bacteriophage in a mass of bacteria for the production of cleared zones or areas is favored. A study of the rate of multiplication both of susceptible bacteria and of the bacteriophage in a mixture of the two in broth makes clear the necessity for care in enumeration. Incidentally, it is pointed out that the conditions for proper enumeration demand the finding of an organism which will show in any given bacteriophage a constant and a maximum concentration. Some space is also devoted to absorption, adsorption, adaptation, resistant strains, and antigenic specificity.—M. S. Marshall, *J. Infec. Dis.*, 37:126 (Aug.), 1925.

Clinical Study of Kahn Precipation Test and Kolmer Complement Fixation Test—Author studied 110 selected cases of syphilis with both methods. Of this number 5 cases of syphilis gave positive Kahn and negative Kolmer reactions until the removal of natural amboceptor when the Kolmer tests became positive. One case of syphilis gave a positive Kahn and negative Kolmer until after 4 weeks of treatment when the Kolmer became positive. Altogether there was complete disagreement in 5 cases of syphilis studied. Of this number 4 gave positive Kahns and negative Kolmers and one a negative Kahn and positive Kolmer. Author concludes: The present study shows a remarkable degree of harmony between the outcome of the Kahn precipitation test and the Kolmer complement fixation test, and indicates the high degree of sensitivity and specificity common to both.—R. L. Kelly, *Arch. Derm. & Syph.*, 12:720 (Nov.), 1925.

Isolating the Colon Group in Water—The writers have made detailed studies of different media recommended for water analysis, particularly with reference to lactose broth and bile media with and without the addition of brilliant green dye. The first series of tests made eliminated brilliant green broth, lactose bile and brillfant green bile as too highly inhibitory for a satisfactory presumptive test medium. In the second series of tests in which work was confined to a comparison between lactose broth and lactose brilliant green bile, lactose broth was found to have the higher percentage of confirmed positive fermentations. Having decided upon lactose broth as the better

* Each month we desire to publish in the LABORATORY NOTES short, original articles, under the author's name, dealing with some phase of applied bacteriology, labor saving devices, modified methods, etc. Contributions should be in the hands of associate editor before the 15th of each month.—C. C. YOUNG, Department of Health, Lansing, Mich.

medium for presumptive tests, the third series of tests was made to compare present standard methods with brilliant green bile as a confirmatory medium. Results would seem to indicate that brilliant green bile may be favorably regarded as a rapid substitute method for confirmation of the colon group.—Norman Howard and Rudolph Thompson, *Eng. & Cont.*, 64:597 (Sept. 9), 1925.

An Epidemic of Scarlet Fever Spread by Ice Cream—Detailed epidemiological investigation, by means of case histories and control histories on well persons, confirmed early suspicions and established the fact that the epidemic was caused by ice cream. The laboratory findings follow: Of the 83 cases on which cultures were taken, 84 per cent were positive for hemolytic streptococci. Cultures were obtained from 93 contacts. Twenty-one per cent of these contacts showed hemolytic streptococci. Of 37 controls 10 per cent were positive for hemolytic streptococci. Toxins were prepared from cultures of hemolytic streptococci isolated from the throat, and from the discharging ear of the ice cream maker who is believed to have caused the epidemic. These toxins were produced according to the method outlined by G. F. and G. H. Dick in the *American Journal of Public Health*, 14:1022 (Dec.), 1924. They were tested on 10 inmates of the Ionia Reformatory, known to be Dick positive, and on 5 inmates who had been attacked by scarlet fever since admission and were known to be Dick negative. Both the toxin from the ice cream maker's throat, and that from his discharging ear gave positive skin reactions on the 10 Dick positive individuals, and negative ones on the 5 known to be Dick negative. Also, these toxins were neutralized by serum from a convalescent scarlet fever patient. Hemolytic streptococci were isolated from samples of the contaminated ice cream. This organism, however, proved to be of bovine origin. A filtrate prepared from it by the same method employed for producing the toxins gave negative skin reactions on all of the 15 Dick positive prisoners. A bibliography is included.—Geo. H. Ramsey, *Am. J. Hyg.*, 5:669 (Sept.), 1925.

Methods of Sterilization of Milk Bottles at Pasteurization Plants in Minnesota—Routine investigations of pasteurization plants throughout the state indicated a need of proper sterilizing facilities for milk bottles as evidenced by high bacterial counts at plants where no provisions were made for sterilization. Chlorine solutions, inexpensive and quickly prepared, were found to be more dependable than steam as a sterilizing agent, particularly in small plants. No objections to chlorine on the grounds of odors and flavors have been reported. The importance of supervision to insure proper operation of apparatus, whether with steam or chlorine, was disclosed as part of the data obtained.—H. A. Whittaker, R. W. Archibald and L. Shere, *Pub. Health Rep.*, 39:923 (May 2), 1924.

VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

The Health of Glasgow, 1924—The population of Glasgow in July, 1924, is estimated at 1,095,969. The birth rate was 23.11, the death rate 15.39 and the infant death rate 119. The birth rate has declined steadily from 36.6 in 1871–80 and the death rate from 24.22 in 1881–90 to the 1924 rates. Comparing the Glasgow rates with those of the other three large cities in Scotland and the four largest in England, it is seen that, next to Liverpool, Glasgow has the highest birth rate, and next to Dundee it has the highest death rate. The death rate from infectious diseases in Glasgow was 1.71 in 1924 as compared with 1.46 in 1923, the excess being almost wholly due to whooping cough prevalence in the early spring, when pneumonia and influenza were also prevalent. Tuberculosis shows improvement. Cancer has declined for the first time in a considerable number of years, the rate in 1924 being 1.16 per 1,000 as against 1.19 in each of the two previous years. Deaths from rheumatism are considerably lower than in the two preceding years, and it is recorded that the deaths from alcoholism remain remarkably few, the rate per million having been 21 in 1921 and only 6 in 1923 and 7 in 1924. As in all the other cities with which comparsion is made, the infant death rate has been higher in Glasgow in 1924 than in 1923. of the four Scottish cities, Edinburgh has a

much lower rate than the rest, while Glasgow comes out rather better than Dundee and Aberdeen. The infant mortality in the first month of life represents nearly one-third of the total.—*Brit. M. J.*, 2:582 (Sept. 26), 1925.

Health **Conditions in Iraq, 1923 and 1924**—There were 787 reported cases of plague in 1923 and 523 in 1924. The epidemic in these 2 years was not exceptional, as the disease appears yearly in Baghdad and Basrah, and sporadically elsewhere. There seems to be no possibility of wiping out this disease, because the infected rats gain access to grain wherever it is being transported. Smallpox is endemic among the tribes and occasionally becomes epidemic in the towns. Vaccination is compulsory but the law is hard to enforce. Measles is always present in some part of the country. Enteric group diseases occurring in Iraq are fortunately not usually very severe; 158 cases were reported in 1923 and 134 in 1924. A progressive increase in the number of tuberculosis cases is reported yearly, probably due to better reporting and more confidence in the medical authorities. Bilharzia is probably the most common disease in Iraq. In the area exposed to infection, the southern part, the incidence is from 20 to 100 per cent. Malaria roughly corresponds in distribution to bilharzia—that is, it favors the marshy and irrigated areas. Only a small part of those afflicted can be treated.—*Lancet*, 2:732–733 (Oct. 3), 1925.

Vital **Statistics in Illinois, 1924**—A number of changes took place in the rank of the diseases which caused 1,000 or more deaths in Illinois in 1924 and 1923. There were 13 such causes in both years. Heart disease occupied the first place both years although the rate for 1924, 173, showed a slight decline over the 1923 rate, 177. Cancer moved from fourth to second place, the 1924 rate being 101 as compared with 98 in 1923. This was partly due to the sharp decline of pneumonia, from 109 in 1923 to 85 in 1924. Violence stood third among the important causes of death in 1924 as well as in 1923, showing a rate of 100 in 1924 and 98 in 1923. Under this heading is included homicide which increased 2 points, suicide which increased 2 points and accidents which decreased 2 points. Chronic nephritis moved from fifth to fourth place, while cerebral hemorrhage moved to fifth place with pneumonia in sixth place, and tuberculosis in seventh place. A very important fact is the decline in infant deaths from diarrhea and enteritis. In 1902 the disease carried off 3,148 babies under two years of age in Illinois. Last year it was credited with only 1,878. This is an unmistakable sign of sound progress in prenatal and infant hygiene.—*Ill. Health News*, 11:291–95 (Oct.), 1925.

Health of the Tongan Islands Protectorate, 1923–1924—The estimated population of the Tongan Islands on December 31, 1923, was 24,673. The birth rate was 33.21 and the death rate 22.68. The population includes 571 Europeans and 235 half-castes. The islands are situated to the E.S.E. of Fiji. Although the Tongan group lies between latitudes 16° and 22° south and is therefore within the tropics, the climate is probably the best of any of the islands in the Western Pacific. From May to November inclusive the thermometer rarely registers higher than 83° F. and as the humidity is comparatively low during these months, Europeans do not feel the heat as they do in the groups to the north. During the wet season, the temperature ranges from 65° to 94°, with a higher humidity. Malaria and tropical fevers are unknown.—*Lancet*, 2:162 (July 18), 1925.

Health in Cayman Islands (Dependency of Jamaica), 1923—The Cayman Islands are 3 small islands in the Caribbean Sea, lying northwest of Jamaica and approximately midway between that island and the southwest coast of Cuba. The general health of the Dependency is good. Digestive disorders of a mild nature are prevalent, induced by the sameness of a diet of starchy foods. There is an occasional case of typhoid. Care with respect to arrivals from Jamaica has prevented the introduction of alastrim. The population is estimated at about 5,253; the birth rate for 1923 was 34 and the death rate 10. The temperature ranges between 70° and 80° in the cooler winter months and 10° higher in summer. The excessive dampness accentuates the heat of summer.—*Lancet*, 2:162 (July 18), 1925.

The Health of Gibraltar, 1924—The death rate of Gibraltar in 1924 was 14.66, as compared with 17.6, the average for the preceding 10 years. The infant mortality fell to 91.6 per 1,000 births, 17.0 per 1,000 below the rate for 1923. The birth rate was 22.25, the zymotic death rate 1.05 per 1,000 and the pulmonary

tuberculosis rate 1.5. These rates have not varied greatly in recent years. There is much overcrowding. As many as 1,316 out of a total of 3,480 families occupied one room only.—*Brit. M. J.*, 2:528–529 (Sept. 19), 1925.

The Tuberculosis Situation in New York City, 1924—Among the 5,587 deaths from tuberculosis in New York City in 1924, 2,287 were of the female sex and 3,300 of the male sex, the rates being 76 per 100,000 for females and 110 for males, 45 per cent greater. The highest tuberculosis death rate among women occurs at present among the younger groups, namely, those between 20 and 25 years of age. The 1924 rate in that group was 119. The highest tuberculosis rates among women are all noted between the ages of 15 and 30 years. Among New York City men the highest tuberculosis death rate in 1924 was between the ages of 55 and 60 years. Comparatively high rates in the latter sex prevail anywhere between 40 and 60 years of age.

In 1924, 600 deaths from tuberculosis among negroes were noted as against 533 in 1923; 318 of these were of the male sex and 282 of the female sex. The present negro population of New York City, on the basis of the 1920 federal census, is now estimated at more than 180,000; and if this figure be accepted the death rate from tuberculosis in 1924 among negroes was 332 per 100,000, while that of the remaining population, practically all white, was only 85—a ratio of 4 to 1 as against the usual ratio of 3 to 1 in the past. Both among negro men and women the largest number of tuberculosis deaths occurred in the younger age group of 20 to 25 years. Negroes now furnish 1 tuberculosis death to every 9 such deaths occurring in New York City, though they probably number only 1 in 30 of the general population.—*Bull. N. Y. Tuberc. Assoc.*, 6:23 (July–Oct.), 1925.

Tuberculosis in Scotland, 1924—Among the 5,000,000 people in Scotland, 5,652 tuberculosis deaths occurred in 1924, the mortality rate being 116 as compared with 118 per 100,000 in 1923. In the larger burghs the mortality from this disease was 133, or 33 per cent higher than in the country districts, where it was 98. The death rate from pulmonary tuberculosis was 80 and from other forms of tuberculosis, 36. The mortality from this disease in Scotland is equally high in each sex, the deaths from tuberculosis of the respiratory system number 1,938 among females and 1,949 among males in 1924. In Glasgow the tuberculosis death rate was 145. A slight rise in the tuberculosis mortality occurred in Edinburgh where the rate, which was 126 in 1923, rose to 133 in 1924.—*Bull. N. Y. Tuberc. Assoc.*, 6:21 (July–Oct.), 1925.

Tuberculosis in England and Wales, 1924—Tuberculosis continues to be one of the formidable problems of national health in England. Among the 38,746,000 persons living in England and Wales in 1924, 41,103 deaths from tuberculosis occurred; 8,413 were of the non-pulmonary type, and 32,690 were of the pulmonary form. More than 80,000 cases suffering from various forms of tuberculosis were notified to the authorities during 1924, among them being 72,724 different new individuals. One-quarter of all the registrations indicated that the patients had non-pulmonary forms of tuberculosis. The tuberculosis death rate, standardized for 1924 according to the Registrar General of England and Wales, was 1,039 per million living, as against 1,049 in 1923; that of tuberculosis of the respiratory system was 801 in 1924, and 238 for forms of tuberculosis other than pulmonary. As in the United States, the mortality from pulmonary tuberculosis in England and Wales is higher among males than among females.

In Wales tuberculosis is somewhat more prevalent than in England. In 1924 among the two and one-half million people in that principality, the death rate was 117 per 100,000 population.—*Bull. N. Y. Tuberc. Assoc.*, 6:21 (July–Oct.), 1925.

Tuberculosis in the Irish Free State, 1924—The tuberculosis mortality in the Irish Free State was 145 per 100,000 in 1924. In 1911 the death rate from the same cause was 212. A higher tuberculosis mortality prevails in Northern Ireland than in agricultural Southern Ireland. In Belfast, where manufacturing industry is more developed, a high tuberculosis mortality is noted, particularly among women.—*Bull. N. Y. Tuberc. Assoc.*, 6:21–22 (July–Oct.), 1925.

The Combating of Tuberculosis in Denmark—In 1900 there were 23 deaths per 10,000 population from tuberculosis in the Danish towns. According to investigations the disease was just as widely distributed among

the rural population, so that the total number of deaths from tuberculosis in 1900 must be estimated to have exceeded 5,000. In comparison with other countries Denmark occupied an intermediary position. For tuberculosis of the lungs England and Wales had the lowest death rate at the beginning of the century, 13.6 per 10,000. The mortality in Norway and Scotland was 17, in Belgium and Denmark 18, Holland and Italy 19, whereas the mortality rate from pulmonary tuberculosis in Ireland, Sweden, Switzerland and Germany varied between 20 and 23 and even exceeded 30 in France, Russia and Austria-Hungary.

Since 1900 very comprehensive measures have been carried out against tuberculosis, and Denmark now has the lowest death rate from tuberculosis in Europe. While the decline in urban mortality from all causes from the years 1900–4 to 1920–3 was 21.7 per cent, the decline in the death rate from pulmonary tuberculosis was 44.7 per cent and from all forms of tuberculosis 48.0 per cent. A strong decline in mortality from tuberculosis in all age groups both among men and women is seen. The most noteworthy fact is the decline among children, where there is a 70 to 75 per cent decrease, a proof of the beneficial effect of the prophylactic methods adopted. The development has been on the same lines among the rural as among the urban population and there has been a similar decrease in the tuberculosis death rate.—J. Ostenfeld, *Tubercle*, 7:6–13 (Oct.), 1925.

The Geographical Distribution of Heart Disease in England and Wales—The annual mortality from heart disease in England and Wales, comprising about 12 per cent of the mortality from all causes, has been studied to see if any notable variation in different parts of the country were shown, if the districts with high and low rates of mortality were distributed in any special manner and if the geographical distribution of heart disease had any relationship to that of acute rheumatism. The data used were the recorded deaths at the different ages, from organic heart disease in the administrative counties and county boroughs of England and Wales for 1911–1914, and from diseases of the heart in 1921–1923.

It is seen that the standardized death rate from heart disease at ages of 25 and over shows quite definitely a tendency to a special distribution in which the higher death rates are found in the counties to the west.

The incidence of the relative mortality is very divergent from that described by Haviland as existing for heart disease and dropsy in 1851–1860. He concluded that the counties in which the mortality from heart disease is greatest are those that are the most inland or the most protected by their physical surroundings from the sea winds. He found that the lowest mortality occurred in the counties farthest west, while in the present data the highest incidence of mortality is localized there.

A definite association exists in the counties between the distribution of mortality from organic heart disease and heart diseases in the aggregate and the mortality from acute rheumatism. The relative incidence of acute rheumatism appears to be the essential factor that determines the incidence of heart disease, although other factors, possibly mainly environmental, may have some influence on the rate of mortality in different districts.—Matthew Young, *Lancet*, 2:590–593 (Sept.), 1925.

Tuberculosis in Winnipeg, 1924—The death rate from tuberculosis of the lungs in Winnipeg, Manitoba, was only 45 deaths per 100,000 in 1924. In 1910 the death rate from the same cause was 88 per 100,000. The death rate from forms of tuberculosis other than pulmonary was 17 in 1924. A remarkably low general death rate was noted in Winnipeg last year. Among the total population of that city, estimated at 194,850, the total deaths from all causes were 1,544, giving a crude death rate of 7.78.—*Bull. N. Y. Tuberc. Assoc.*, 6:22 (July–Oct.), 1925.

ENGINEERING

ABEL WOLMAN, C.E.

Gas Hazards in Street Manholes—As gas hazards in manholes are similar to those in mines, the Bureau of Mines has submitted this report on its investigations. The dangerous gases found in street manholes in different cities of the United States may be grouped into 3 classes: (1) poisonous, (2) suffocating, (3) explosive, although some fall in more than one class.

Carbon monoxide is the cause of most of the gassing accidents in manholes. Other poisonous gases less important as hazards to manhole workers are: ammonia, sulphur dioxide, benzol and gasoline.

Carbon dioxide, nitrogen and natural gas are non-poisonous; they become dangerous only when present in sufficient amount to dilute the oxygen below 12 or 13 per cent. Suffocating atmospheres are less frequently encountered in manholes than explosive and poisonous atmospheres.

The following summary concludes the report:

The atmospheres in 15 manholes at Pittsburgh, Pa., and 12 at Philadelphia, Pa., suspected of being gaseous, were tested. Some of the holes contained city gas which had leaked into the holes from distributing mains. The natural gas distributed at Pittsburgh is non-poisonous, provided no artificial gas is added, but large volumes may suffocate workers in unventilated manholes by displacing the air; such accidents have happened. Manufactured fuel gas distributed at Philadelphia is high in carbon monoxide, which is poisonous; small amounts render the air in manholes unfit to breathe.

Gassy manholes require thorough and continuous ventilation to insure safety to workers. A hand-operated rotary blower, similar to a forge blower, with canvas pipe leading to the bottom of the hole is serviceable.

Tests were made for CO with palladium chloride test papers, which change from yellow to gray or black when moistened and exposed to 0.25 per cent or more of CO for 5 minutes; this simple test shows presence of very dangerous amounts of CO such as will quickly overcome a man, but it is not sensitive enough to indicate lesser amounts which will affect a man more slowly. The iodine pentoxide or hoolamite indicator for CO gave color changes from light gray to bluish gray when 0.07 per cent or more CO was present, and is a better indicator than the test papers, for CO in concentrations which may affect men.

Tests for explosive gas mixtures were made at the holes with a gas bomb constructed of a 2" x 2" x ¾" pipe tee, reducers, stop-cocks, and an automobile spark-plug in the ¾" opening. Gases from the hole were transferred to the bomb with a rubber hand bulb and tubing, and sparked by means of two dry cells and an automobile spark coil. Explosions were indicated by a kick on a pressure gage on the bomb.

Explosive gas mixtures were found in one hole at Pittsburgh and two at Philadelphia.

The hose mask is recommended for use in manholes when respiratory protection is necessary.—S. H. Katz, E. G. Meiter and J. J. Bloomfield, *Reports of Investigations*, Department of Commerce, Bureau of Mines, Serial No. 2710, October, 1925. A. W. B.

Model of $10,000,000 Sewage Disposal Plant Creates Great Interest—To increase public interest in civic improvements, Milwaukee realtors have had a model of the new sewage disposal plant made for display in their windows and elsewhere. The model is constructed on the scale of 20 feet to the inch and shows the plant as it will appear when completed.—*Am. City*, 38:507 (Nov.), 1925. A. W. B.

A Review of the Work of the U. S. P. H. S. in Investigations of Stream Pollution—In 1910, the first systematic investigation of the status and effects of sewage pollution in any large area was begun with the survey of the cities of the Great Lakes region. Investigations from 1910 to the present are recounted. Probably not less than 85 to 90 per cent of the sewage from cities is discharged without treat-

ment into the most convenient stream. With the growth of urban population the sewage pollution of streams and coastal waterways must increase and it seems inevitable that eventually the pollution will become such that water-purification plants of the highest attainable efficiency will not be able to deliver consistently safe effluents. To guard against this condition, it will be necessary to limit the pollution of such inland streams as are necessary sources of water supply by such measure of sewage treatment as will suffice to keep the pollution at water-works intakes within definite bounds.—W. H. Frost, *A. S. C. E.*, 51:1810 (Nov.), 1925. A. W. B.

The Value of Sedimentation in the Treatment of Turbid River Water—Sedimentation and filtration are partners in the process of clarifying turbid waters, but the dependence of the filter upon the settling basin is not always recognized. Sand settles close to the inlet pipe, but clay particles become diffused over a wide area and, if allowed to settle naturally, require a long detention period. Coagulation, which collects these particles in masses, accelerates sedimentation and greatly shortens the necessary detention period. Straight-line, radial, rotary and spiral inward flow and the layout of sedimentation basins are treated in this article.—Wynkoop Kiersted, *Am. City*, 38:469 (Nov.), 1925. A. W. B.

Bathing-Beach Water Made Safe by Chlorination—On account of the current of the river it was impossible to utilize the ordinary methods of water sterilization. The fact that any given amount of water reaching the beach would pass by and beyond that portion used by the bathers in less than 2 minutes meant continually treating all the water. This was accomplished by placing four liquid chlorine tanks about 50 yards up-stream from the bathers and hooking them up in series with common ¾" garden hose. The hose was fitted with four millimeter glass pet-cocks placed at 3-foot intervals, placed on the bottom and anchored there. The cost of chlorine used amounts to approximately $8.00 per day.—*Am. City*, 38:495 (Nov.), 1925. A. W. B.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M.D.*

Comparison of Ohio State Industrial Insurance Rates—The new manual which has just appeared states that the State Insurance Fund as of December 31, 1924, to cover accidents and diseases showed total assets of over 47 million dollars, of which about 44½ millions is invested in bonds. Over 40 millions are held in a claim reserve to cover future payments on accidents occurring prior to January 1, 1925. The types of accidents are classified as related to this claim reserve. The catastrophe reserve contains over 2 million dollars; likewise there is over 2 million dollars in the surplus or "clear and unincumbered balance." Total receipts for the year were $13,299,601.50, composed of Premiums $10,797,599.17, Interest $2,500,672.23 and Returned Warrants $1,330.10. Claims paid amounted to $10,485,116.14. Revised rates going into effect July 1, 1925, show that of the 750 industrial classifications, 394 remained unchanged, 195 have decreased in rates, and 161 increased in rates as based on the last 5 years' experience.

A table shows a comparison of Ohio rates in a few of the larger industries with rates charged by private insurance carriers in other states. Examples: *Auto Manufacturing*—New York, $1.77; Indiana, $1.24; Illinois, $1.20; Kentucky, $1.42; Michigan, $1.45; Ohio, $0.80. *Blast Furnaces*—New York, $8.43; Indiana, $4.95; Illinois, $4.32; Kentucky, $5.18; Michigan, $4.70; Ohio, $1.60. *Office Employes*—New York, Indiana, Michigan, 7 cents; Illinois, 6 cents; Kentucky, 9 cents; Ohio, 3 cents; etc. It is said that private insurance companies must collect $1.00 for every 60 cents paid to the insured worker, as the average cost of administering compensation insurance by private companies is 40 per cent of their premium receipts. In Ohio, all premium receipts must be used in benefits to injured workers, with the exception of 1 per cent which is set aside for accident and disease prevention work. The state itself

* The editor of this Section will gladly receive contributions from members. Please address all communications to Hartman-Ohio Bldg., Columbus, O.

bears the expense of administration which is less than 5 per cent of the figure representing total premium receipts. In substance, it costs $1.06 in Ohio to provide $1.00 of compensation which in other states requires $1.67. Thus the $10,797,599.17 paid by employers in Ohio for premiums in 1924 would have cost them $17,995,997.95, "which means a saving to Ohio employers by the state plan of $7,198,398.78 for the year 1924."

The occupational disease rating method was revised by the last legislature and provides for a flat rate of 1½ cents per $100 payroll irrespective of the nature of the industry. (This is absolutely changed from the method in vogue in 1924, when all industries were grouped into 12 schedules providing different rates as to hazards, and ranging from 1 cent to $4.00 per thousand dollar payroll—all of which is now done away with.)

Merit rating by which employers are rated each year on the basis of their individual experience during the past year, applies to accident premiums only and not to occupational diseases. In the former case (accidents) this provides an incentive for the employer to do all in his power to reduce his accidents in order to reduce his premium costs (there is no similar inducement, however, as regards occupational diseases).

The manual then takes up the rules of the Industrial Commission concerning compensation, gives an explanation of the merit rating system, and follows with a table of workmen's compensation rates for the various classifications.—*Ohio State Insurance Manual*, No. 13, Ohio Industrial Commission, Columbus, effective July 1, 1925.

Alleged Cheapness of the Ohio State Fund Insurance—The bureau attacks the alleged cheapness of the Ohio State Fund plan in its leading article for this month. After re-quoting comparison of rates between New York and Ohio, the points are made chiefly as follows: Comparisons of rates in a few classifications is vain, due to differences in local conditions and to the fact that in Ohio bitter complaints come from the insured about their classifications and there is much resorting to the employment of expensive experts or to political influences to secure proper classification and rating. That the comparisons given are "hand picked" to exaggerate differences, other examples are shown, as follows: *Trees, pruning, spraying, etc.*—New York, $4.92; Ohio, $6.30. *Lime quarries*, New York, $5.91; Ohio, $5.00. *Tanning*, New York, $2.25; Ohio, $2.00. *Sewing machine manufacturers*, New York, $1.34; Ohio, $1.90. New York rates average a little below "manual"; whereas Ohio rates in actual practice average above "manual." In New York, the rates cover occupational diseases (for which in Ohio there is a small extra charge), taxes (from which in Ohio insurants are exempt), expenses of administration (which in Ohio are imposed upon the general taxpayers), an expert accident prevention service (which in Ohio is charged for but not provided), and an agency service (which in Ohio must be contracted for with third parties at an extra charge, if wanted).

The benefits to the insured worker in New York are not "about the same as in Ohio" but are at least 15 per cent greater—for the "Ohio plan" is notorious for the weakness of its medical service. The New York and Ohio rates are not truly comparable, because charged for very different degrees of protection. The New York rates are the prices for complete indemnity. It is not so in Ohio; the Ohio employer rather than the insurer bears the risks of excess losses. In New York, in 1924, compensation benefits absorbed nearly 70 per cent of the premiums; also some $900,000 was returned as dividends; some $400,000 went for taxes; some $500,000 for inspections, premium rating bureaus, and other measures for accident prevention; some $3,200,000 for administration, audits and claim investigations, most of which represents the higher cost of a more elaborate and less cheap administration system, which it is claimed is more efficient. Two authoritative investigations—one from Pennsylvania and the other by a committee of the Cincinnati Chamber of Commerce—have pronounced the administration in Ohio to be insufficient and inefficient.

Many Ohio employers have lost heavily through lack of the services of capable agents, while others have resorted to the employment of "experts" and "service companies," thus paying heavy charges in addition to their premiums—all of which represents some $2,200,000 more of the difference between the two plans. "If the system of private insurance (which prevails in New York and some 35 other states) were really so much more expensive than insurance under the Ohio plan that the employers in such other states would save 40 per cent of their premiums by the simple substitution of the Ohio plan, why is

it that employers in such states do not want the Ohio plan?" "The only rational explanation is that there is no real saving in the Ohio plan of insurance, that it does not provide what employers need, that it is cheap but defective. In insurance, as in many other things, what is cheapest in price is seldom the best and most economical."—*Workmen's Compensation Bull.*, Workmen's Compensation Publicity Bureau (80 Maiden Lane, New York City), No. 7:5–9 (Oct.), 1925.

Toxic Effects of Lead Given Intravenously—In the more or less experimental treatment of cancers by injections of metallic lead in colloidal form into the veins, the authors have, over a number of years, had opportunity to discover the exact symptomatology of lead poisoning in various persons and in measured doses with full certainty that all of the lead has entered the system. Among important features they note that there is a great difference in individual tolerance to lead; that body weight plays a part; that the age group between 55 and 65 is more tolerant; and that males are more tolerant than females in proportion of 34 to 29 when maximum toxic amounts are given, and 10 to 4 when minimum toxic amounts are given. Repeated small doses over a long period of time produce a dangerous, cumulative effect, while a few large doses given at long intervals may have no bad effect whatever. It was found that lead so injected was excreted very largely by the kidneys, and that only a small proportion appeared in the stools.

The exact effect of lead on the blood in relation to "stippling" or basophilia, polychromasia, abnormal forms, anisocytosis and poikilocytosis, and anemia are discussed in detail. Basophilia is one of the earlier signs of lead posoning, also one of the most reliable. Often one stippled cell is found in every five or six fields in the microscope. The smallest amount of lead which produced stippling amounted to only 0.02 g. Also stippling has been observed within 3 hours after a single injection amounting to 0.1 g. of lead. Great variations both in time and in the amount, however, occur. Apparently polychromasia has to do more with the recovery from the effects of lead. Abnormal forms of red cells are associated with considerable anemia as well as stippling. Anisocytosis and poilkilocytosis are associated with profound anemia. Far more striking than the reduction in the number of red corpuscles may be the reduction in hemoglobin content (hence the anemia is a true secondary one). Furthermore, pigment in the red cells gives them a lifebuoy appearance due to its accumulation in the periphery of the cell leaving an apparently clear zone in the center. In no case have stippled cells been found in the bone marrow and a lengthy investigation has not discovered any important difference in the bone marrow of healthy and lead poisoned animals. Respecting the white cells, there is usually some leucocytosis, but a relative lymphocytosis, as described by others, has not been common. A slight increase in the eosinophile cells appears to be fairly common. Leucopenia is rarely seen.

A blue line on the gums was an uncommon occurrence, happening in only 3 cases out of the 58 studied, and these had been receiving lead over a long period; the blue line also disappeared in 2 or 3 weeks, a phenomenon probably due to the difference in the manner of administering lead, *i.e.*, intraveneously, instead of by mouth.

Nausea and vomiting and symptoms of acidosis are signs with this method of administering lead, but intestinal colic was never seen until, during the last year, heavy doses of colloidal lead were injected. Also constipation and diarrhea were apparently not features.—W. Blair Bell (London), W. R. Williams (Liverpool), and L. Cunningham (London), *Lancet*, 5329:793 (Oct. 17), 1925.

Relative Values of Methods of Enumerating Bacteria in Air—The article discusses the instruments used and operating conditions including the water aeroscope, sand aeroscope, sugar aeroscope, and the Greenburg-Smith impinger tube. The results of comparative tests are given in tabular form. The conclusions are that the modified water aeroscope is approximately 10 times more efficient than the standard sand method, is relatively free from error and is easily prepared. The Anderson-Armspach (filter paper) dust determinator is also some 10 times more efficient than the sand method but is open to errors and is quite tedious. The impinger tube does not appear suitable for enumerating bacteria in air when the rate of flow is 1 cubic foot per minute, while the sugar tube is impractical as an aeroscope.—W. J. McConnell and B. G. H. Thomas, *Pub. Health. Rep.*, 40, 41:2167 (Oct. 9), 1925.

FOOD AND DRUGS

HARRY W. REDFIELD, PH.D.*

HOW ABOUT IT?

THE EDITOR of these notes has now served you for a year without remuneration of any kind. He did not expect or wish financial remuneration but he did desire remuneration in the form of evidence that interest in the public health phases of food and drug matters had been stimulated. In the first issue of Food and Drugs Notes for which he was responsible, he asked you to let him know what kind of material you would find of most value and then furnished illustrative samples of types of notes which could be supplied. Throughout the year he has continued to furnish samples, but not one reader, if there be any, has answered his question. He asked those interested to send in questions which they would like to have answered. Not one question has been received. He requested anyone having interesting new and valuable bits of information which should be made available to others, to submit such information as the basis for a note. Two responses to this request were received, both from the Managing Editor of this JOURNAL. One reader wrote and expressed accord with the point of view put forth in one of the comments. That is the only letter received to date and has been given the place of honor in our file, which consists of that lone solitary message of interest and support. As we start our second year, we repeat our earnest request for enlightenment and help. What are you going to do about it?

COMMENTS

Psychology of Child Feeding—The children who "hae meat and will na eat" are one of the important problems demanding the help of the nutrition specialist. A constantly increasing body of knowledge based on accurate scientific experiments is proving the relation between food habits and the mental and physical development of children. "Tell me what he eats and I'll tell you what he is" has several grains of scientific truth in it when applied to children's diets.

Why there should be so many of these young "feeding problems," who are the despair of their mothers and oftentimes of the child specialist, is a question, however, that has been given little attention. Attention has been focused too often on the child himself, without realizing that attention was the very thing he was seeking to gain. How he got that way has not been given enough thought. Obviously, though, it is a psychological problem in most cases and must be approached from that angle.

The Bureau of Home Economics of the U. S. Department of Agriculture is making a study of the causes and remedies of food dislikes and refusals of children of the preschool age. Facts are being collected from the mothers of such children by means of a questionnaire circulated through the Merrill-Palmer Nursery School, of Detroit, and the American Association of University Women.

From the summary of the experiences of a large number of mothers the bureau hopes to work out suggestions that will aid in preventing children from forming food antipathies and help in overcoming them once they become established.

Municipal Pasteurizing—Ever since Nathan Straus proposed the idea years ago, many thinking people have continued to cling to the conception of the municipally operated pasteurizing plant as offering the best solution for the vexing problem of the milk supply. Their minds go along with that of Straus in analogizing the milk and water supplies for cities, the milk to be pasteurized after possible clarification, and the water to be chlorinated after

* Address all comment, notes and suggestions to 641 Washington Street, New York City.

possible filtration. The paper by Dr. K. E. Miller entitled "A Demonstration at Tarboro, North Carolina, of a System for Sanitary Control of Milk Supplies of Towns and Small Cities, with Special Reference to Operation of a Municipal Pasteurizing Plant," which appeared in *Public Health Reports* for November 6, 1925, is, therefore, of more than passing interest and is worthy of careful study and thought, for the reason that Tarboro is typical of some two or three thousand other towns or small cities in the United States which are yet in serious need of sanitary milk supplies.

"Cleaning Milking Machines"—As the milking machine has been repeatedly recognized as one of the most likely causes of high count milk, the contribution under the above title by L. H. Burgwald of the Bureau of Dairying, U. S. Department of Agriculture, in *Journal of Agricultural Research*, Vol. XXXI, No. 2, page 191 (1925), is especially welcome. The author found that comparative tests of the three methods commonly used for sterilizing milking machines, namely, heat, chloride of lime, and a mixture of common salt and chloride of lime, showed that the heat method gave more uniform and appreciably lower bacterial counts than did the other two methods. The mixture with salt gave somewhat better results than did the chloride of lime alone, but it corroded some of the metal parts. In the heat method, when milking twice a day, the apparatus was first rinsed, immediately after milking, by drawing clean water through by vacuum; then it was washed with a brush in hot water (110° to 120° F.) containing washing powder, followed by a rinsing in clean hot water; after which it was placed in hot water at 160° to 165° F. and allowed to remain in the hot water until the next milking, the water cooling gradually.

Mold in Butter—It is encouraging to learn through the medium of an address made by H. Macy of the Dairy Department of the University of Minnesota before the last convention of the Minnesota Creamery Operators and Managers Association that the cause of mold in butter is being exhaustively studied by him and his associates. The investigation, which will require several years, has only been begun, but some fundamental facts have already been established. Mold is not primarily a surface phenomenon due to parchment liners, wrapper and circles, or to tubs, as has quite generally been assumed to be the case. It is much more likely to be disseminated throughout the butter, and means in all cases lack of sanitation. The raw cream practically always contains some mold; in some cases, tremendous quantities of it. Should the latter, on grounds of decency, be allowed to enter into the manufacture of butter, Mr. Control Official? Dirty churns, pipes and pumps in the creamery have been found to be serious sources of mold. Do you have such conditions in your territory, Mr. Official? Moldy starters have also been guilty of infecting cream. Ordinary molds have been considered chiefly as affecting the appearance of butter. Professor Macy is convinced that their activity is much more deep seated and that they are important factors in some types of deterioration of butter. Heavy pasteurization will kill the majority of the molds in cream. Creamery operators are sure to attempt salvage by such means. Should you allow them to do so, Mr. Official, in the light of the knowledge that heavy mold infection means gross lack of sanitation at some time in the history of such cream with all that that implies? From what has been learned so far it appears that the amount of mold in the raw cream offers a measuring stick for the care and cleanliness employed in its production, while the amount of mold in the butter made from such cream reflects also the degree of sanitation, or lack of it, prevailing in the creamery.

Bacterial Flora of Dried Eggs—The literature on the subject of dried eggs is meager. This is especially true regarding studies which have had as their object the development of means for determining whether inedible eggs were used in whole or in part in the preparation of the product under examination. It is with pleasure that we note a paper by G. G. De Bord on "Effect of Dehydration upon the Bacterial Flora of Eggs" in *Journal of Agricultural Research*, Vol. XXXI, No. 2, page 155 (1925). The study is valuable as showing that such counts as were made do not offer a means of reaching a proper decision, because, while the count of viable bacteria in freshly prepared dehydrated egg varies, in general, with the quality of the raw product and the method of dehydration, on the other hand, the counts are so markedly reduced during storage of the dry product, especially at high temperatures, that dried egg made from red rots, white rots, mixed rots, sours, blood rings and spots after storage at 25° C. or 37° C. for 10 months

showed lower counts than freshly prepared dried egg made from the best eggs obtainable. As the age of the product and the temperature of storage in practically all cases are unknown to the control official, bacterial counts seem to offer no hope. We happen to know that chemical studies were also made during this investigation, upon which we will comment at a later date when they have been published.

Some May Not Know—The skin which is formed on milk when it is heated is a mixture of casein and albumin, the principal proteins of the milk. The skin is probably due to rapid drying of the protein at the surface rather than to coagulation.

ABSTRACTS

The pH Change in Milk Heated to Different Temperatures (trans. title)—Centrifuged milk was heated in cotton-stoppered flasks on the water bath at temperatures of 56, 68, 75, and 100° C. for 30 minutes and then allowed to cool to room temperature. Electrometric determinations of the H-ion concentration of the various samples showed a progressive decrease in pH values with increase in the temperature of heating.—N. L. Cosmovici, *Compt. rend. Soc. de biol.*, 92, 2:73, 74, 1925.

Continuation and Extension of Work on Vegetable Proteins—This progress report includes brief summaries of the investigations on the proteins of spinach and alfalfa leaves reported by Chibnall and Nolan, and of recent vitamin and other nutrition studies of the authors and their associates.—T. B. Osborne and L. B. Mendel, *Carnegie Inst. Wash. Yearbook 23*, 1924, pp. 286–290.

Comparative Physiological Importance of Iron and Zinc (trans. title)—The authors report that mice on a diet supposedly adequate except for iron live considerably longer than on a diet free from zinc, and they conclude that zinc is of even greater physiological importance than iron.—G. Bertrand and H. Nakamura, *Compt. rend. Acad. d. sc.*, 179, 3:129–133, 1924.

Newer Viewpoints in Infant Feeding—This is a general discussion of recent advances in the field of infant feeding, including "the recognition that stools are not the immediate determining guide to the feeding of the infant; that many infants thrive only when they receive concentrated milk mixtures; that many infants require not less than 150 to 200 cal. per kg. of body weight; and, finally, that milk fermented with the lactic acid-producing group of bacilli is more easily digested by many infants than is sweet milk."—E. A. Park, *Conn. State Med. Soc. Proc.*, 132:190–204, 1924.

Action of Lung Fat on Growth (trans. title)—A single series of experiments is reported in which dog lung fat, when fed to the extent of 3 per cent of the ration to rats on a diet deficient in vitamin A, brought about resumption of growth to an extent equal to that secured with 5 per cent butterfat.—H. Roger, L. Binet and M. Vagliano, *Compt. rend. Soc. de biol.*, 90, 17:1310–1311, 1924.

The Bactericidal Action of the Blood in Certain Dietary Deficiencies—A comparison is reported of the bactericidal power of the whole blood of rats on various deficient diets as follows:

In the normal controls the body temperature varied from 37 to 38° C., and the average percentage of staphylococci killed by the blood was 70. In 12 rats on a diet deficient in vitamin A and the antirachitic factor, the corresponding figures obtained when the first symptoms due to a deficiency of vitamin A were noted were 37.2° and 54 per cent. On the same diet followed by a single exposure to ultraviolet light 1 hour before death, the average figures for 4 rats were 36.6° and 48.5 per cent. In a series of rats killed after varying periods on a diet deficient in vitamin A and the antirachitic factor, a decrease in bactericidal properties occurred after but not before the onset of xerophthalmia. Of 6 rats which had developed rickets on a diet lacking in the antirachitic factor and phosphorus, the bactericidal power was normal in 2 and greatly reduced in 4. In 9 rats killed at varying periods on a vitamin B deficient diet, the average body temperature at death was 35.3° C. and percentage of staphylococci killed 43.

It is concluded that rats fed on a diet deficient in vitamin A and the antirachitic factor show a reduction in the bactericidal power of the blood only after the onset of xerophthalmia or some other infection, and that rats fed on a diet lacking vitamin B show a reduction in the bactericidal power of the blood not associated with bacterial infection but possibly correlated with the fall in body temperature.—G. M. Findlay and I. Maclean, *Biochem. J.*, 19, 1:63–70, 1925.

The **Effect of Digestive Juices on the Potency of Botulinus Toxin**—"Botulinus toxin resists a degree of acidity equivalent to that of the stomach even when exposed thereto for 24 hours at 37° C. It is less resistant to alkali, however, as shown by the fact that in a medium of weakly alkaline reaction its potency is reduced to less than one-tenth in 24 hours. It is unaffected by peptic and tryptic digestion. Because of its instability in mildly alkaline solutions and resistance to acid, there is reason to believe that the toxin is in the main absorbed from the upper portion of the digestive tract; that is to say, from the stomach and upper duodenum."—J. J. Bronfenbrenner and M. J. Schlesinger, *J. Exper. Med.*, 39, 4:509–516, 1924.

Effect of **Anesthesia and of Sedatives on the Serum Therapy of Experimental Botulism**—In addition to favorable results previously reported for ether anesthesia and morphine in connection with the serum therapy of experimental botulism in guinea pigs, luminal sodium and nitrous oxide-oxygen were also found to delay the progress of intoxication.—J. J. Bronfenbrenner and H. Weiss, *J. Exper. Med.*, 39, 4:517–532, 1924.

The **Diabetic Problem of To-day**—In this discussion of the present status of diabetes, attention is called to the fact that the disease is 15 times as frequent among those over 40 as among those under 40, from 10 to 20 times as frequent in fat as in thin people, and 2½ times as common among Jews as among the other races. The higher incidence among Jews is shown to be the result not of a racial tendency to the disease but of the tendency to obesity in the adult Jew.—E. P. Joslin, *Jour. A. M. A.*, 83, 10:727–729, 1924.

Energy Metabolism of Normal New-born Babies—In this study of the respiratory metabolism of 50 infants ranging in age from 6 hours to 15 days, 234 observations were made, using the senior author's respiration incubator with slight improvements.

Of the entire number of observations 98 periods with 38 infants were considered to be truly basal. The average figures obtained in these periods were 6.67 calories per hour or 2 cal. per kg. and 29.16 cal. per square meter (Lissauer) per hour. The respiratory quotients for these basal periods ranged from 0.66 to 1.16. Averaged by age from all the observations, the respiratory quotient for the first 24 hours was 0.79, the fourth day 0.75, and the ninth day 0.85. The basal metabolism was the highest in the second 24 hours, decreased gradually to the sixth day, and then rose steadily. On the basis of statistical analysis it was concluded that surface area is a slightly better measure of basal metabolism in infants than body weight, and that there is practically no correlation between heat production and pulse rate.

A comparison of basal metabolism with metabolism during crying indicated that the muscular effort of crying involved an increase in metabolism equal to the basal metabolism. Crying 1 per cent of the time raised the metabolism by 1 per cent.—J. R. Murlin, R. E. Conklin and M. E. Marsh, *Am. J. Dis. Child*, 29, 1:1–28, 1925.

The Use of a Meal Unit Diet in Diabetes—A simple formula for estimating diets for diabetic patients is outlined as follows:

"The principle of this diet is based on giving the patient 30 calories per kilogram of body weight and giving carbohydrate, protein, and fat in the ratio of 1:2:3. In making the calculation, the patient's weight in kilograms is multiplied by 30. This gives the total calories necessary for basal maintenance diet. One-tenth of this amount of calories is given in carbohydrate, and a division of this figure by 4 gives the grams of carbohydrate necessary. Twice this amount is given in protein and three times this amount in fat."

It is stated that while the system is not applicable to the most severe cases of diabetes, it has been found to work well with the majority of diabetic patients.—R. H. Major, *Jour. A. M. A.*, 84, 11:799, 1925.

Effect of Ingestion of Yeast on the Leukocyte Count—A comparison is reported of the leucocyte count for 8 successive days of 6 subjects on ordinary diet and 12 on ordinary diet plus 3 cakes daily of yeast. In most cases the leucocyte count of the subjects taking yeast showed a marked increase over the previous period without yeast.—E. L. Heintz, and W. H. Welker, *Arch. Int. Med.*, 35, 4:500–502, 1925.

Local and General Defenses Against Infections, and the Effect on Them of Vitamin-Deficiency—To determine the cause of the diminution in resistance against infections which results from a deficiency of vitamin A, an examination was made of the blood of 7 rats which had been kept on a diet deficient in this vitamin.

It is concluded that a deficiency in vitamin A does not diminish the efficiency of the general humoral defenses of the body, but that it does that of the local tissue defenses. "Under the ordinary conditions of vitamin experiments, the breaking down of local defenses allows access to the comparatively avirulent bacteria which normally inhabit the intestine, the respiratory tract, or the conjunctival sac, so that the resulting infections are as a rule avirulent in type. When organisms of a more virulent type are present, the condition of the local defenses rather than the mere presence of these organisms may be the factor which determines the onset of a virulent infection."—W. Cramer and A. N. Kingsbury, *Brit. J. Exper. Path.*, 5, 5:300–304, 1924.

The Iron Content of Spinach—Colorimetric determinations of the iron content of 13 samples of spinach, including two dehydrated and one commercially canned, are reported, with minimum, maximum, and average values for the fresh spinach of 0.00267, 0.00867 and 0.00512 per cent. The average content of iron in the dehydrated spinach was 0.056832 and in the canned 0.00076 per cent.—A. Lichtin, *Am. J. Pharm.*, 96, 5:361–364, 1924.

Sodium Iodide Treatment of Rochester's Water Supply—Arguments for and against the sodium iodide treatment of water for goiter prophylaxis as practiced in Rochester, N. Y., are presented in this paper and accompanying discussion.—B. C. Little, *Jour. Am. W. W. Assn.*, 12, 1:68–86, 1924.

The Bactericidal Property of Milk—In experiments conducted at F. G. Gade's Pathological Institute, Bergen, Norway, the bactericidal properties of about 70 samples of milk were tested, using *B. typhosus* and two strains of *B. paratyphosus*. Bactericidal properties were demonstrated in fresh milk during the first 4 hours at 37° C. (98.6° F.), and for a longer period at room temperature. Such properties were destroyed by heating the milk to 75° C. for 15 minutes, but milk heated to 70° for the same length of time was still active. It is suggested that the bactericidal properties are in close relation to the oxidizing enzymes in the milk. Much variation was found to exist in the ability of milk to retard bacterial growth during different seasons of the year and in the resistance of different strains of bacteria to this action.—F. S. Hanssen, *Brit. J. Exper. Path.*, 5, 5:271–280, 1924.

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CHILD HYGIENE

TALIAFERRO CLARK, M.D.

Dental Conditions in London Schools—In 1924, 37.9 per cent of the children were returned by the school doctors as suffering from obvious dental decay; in 1923, the proportion was 39.6 per cent (the school dentist examining the teeth with mirror and probe, of course, finds higher percentages). There was no improvement in the condition of the teeth of entrant infants. As compared with 1923, the improvement in 1924 was found in the intermediate age group; the proportion whose teeth were passed as satisfactory being 58 per cent as compared with 54 per cent in 1923. The percentage with dental decay noted in the "leaver" group was only slightly better in 1924 than in the previous year. The improvement in the eight-year-old group is ascribed to the institution since the war, of further facilities for treatment and increase in the number of school dentists.—*Med. Off.*, Oct. 31, 1925, p. 195.

Preventing Goiter—On medical examination of 25,799 pupils attending the elementary and high schools of Syracuse, N. Y., in the fall of 1923, it was found that 4,152 children presented thyroid enlargement, ranging from the pre-goitrous condition to fully developed goiter. Following this examination, notices were sent to the parents calling attention to the goiter and recommending that the family physician be consulted. In cases where this advice was not followed, they were asked to give permission for the administration of iodine tablets by the school nurse under the direction of the school physician.

In the fall of 1924 a reëxamination was made of children under treatment for goiter, a total of 2,358 cases. Of this number approximately 600 were found not to need further treatment.—*Health News*, N. Y. State Department of Health, Nov. 9, 1925.

Whooping Cough—The analysis of 442 cases of infants less than a year old, 423 in older infants, and 199 in children over 3 years, emphasizes the lack of the whoop in younger children. By waiting for the whoop, and not isolating in time, an epidemic may become installed. The infants are extremely restless, and their crying is with rapid breathing, interrupted by frequent coughing. They scratch their faces, bump their heads against the side of the crib, and throw their arms about. Whooping cough is a serious disease in infants; it may induce fatal closure of the glottis or fatal convulsions from other cause or from the whooping cough paroxysms; in the latter, possibly, by necrosis of ganglion cells. Complications on the part of the lungs are common in infants; the infant may survive a first attack of complicating pneumonia and succumb to a second.

Of the total 1,064, 38 per cent died of those under 3; 10.4 per cent of the 2 to 3 age and 3 per cent of the 199 over 3.—*Ztschr. f. Kinderh.*, Sept. 28, 1925, p. 103; *Jour. A. M. A.*, Nov. 14, 1925, p. 1596.

Morbidity and Mortality of Diphtheria—In contradistinction to the generally current opinion that the morbidity and mortality of diphtheria is closely related to the undiagnosed, late or untreated cases of the disease and the virulent carrier, Lewis is of the opinion, based on 10 years of field investigations of the disease, that a dominant factor in the morbidity lies largely in the cyclic epidemicity of measles. In other words, measles frequencies are followed by increase of diphtheria and increased morbidity from this disease occurs through the production of a tide of nasal carriers the isolation of whom during measles prevalence produces a decreased morbidity.

The author is of the opinion that he can control diphtheria by finding and eliminating carriers both virulent and non-virulent, during and following all respiratory factors, particularly in measles. However, he is not of the opinion that equally satisfactory results are constantly obtainable by this method in the control of the mortality. In his opinion the as yet hidden factor partially responsible for the excessive varying mortality from diphtheria will be

eliminated "when cultures are returned not as negative for diphtheria, but positive for the predominant organism or organisms."—Dwight M. Lewis, *Boston M. & S. J.*, Nov. 12, 1925, p. 913.

Breathing Exercises—A clear distinction should be made between a pure breathing exercise and an exercise designed to exercise the muscles of the chest. A pure breathing exercise should, of course, be performed without any movements of the arms or other parts of the body.

In deep breathing the arms should hang loosely by the side, and the muscles of the body be relaxed, in order that the diaphragm may descend to the utmost, and that the capacity of the thorax may be increased to its fullest extent unhampered by any other muscular movement. The abdominal muscles especially should be relaxed. The severe restriction to breathing which takes place when the arms are moved and the head pulled back can be watched by anyone.

Exercises designed to develop and train the muscles of the chest should be called "chest exercises."—Common Mistakes in the Teaching of Physical Training, H. B. Hill, *Brit. Med. J.*, Oct. 3, 1925, p. 608.

Prevention in Diphtheria and Scarlet Fever—Since the introduction of antitoxin in the treatment of diphtheria, the mortality from this disease has been reduced approximately 75 per cent, although but little impress has been made on its incidence. Similarly, the death rates from scarlet fever have progressively diminished without the use of antitoxin. The observations of an experienced health officer on methods of prevention should be of interest to all workers in this field. They are as follows:

Hospital isolation is not effective as a means of prevention of diphtheria and scarlet fever. The reduction of deaths from diphtheria and scarlet fever has been associated with the introduction of antitoxin treatment of diphtheria and with hospital treatment of both diseases.

Disinfection, as generally practiced, is without influence on prevention of the spread of diphtheria and scarlet fever.

In the district studied 3.1 per cent of hospital treated cases of diphtheria gave rise to return cases, while the home treated did not, during a period of 5 years.

Of hospital treated cases of scarlet fever 14.1 per cent gave rise to return cases of the disease, but of the home treated cases only 3.7 per cent gave rise to return cases during a period of 5 years.

Isolation hospitals, by increasing the length of infectiousness of cases, defeated to some extent the object of prevention for which they have been established.

Quarantine of well contacts, especially children, cannot be effective practically as a means of prevention of scarlet fever and diphtheria.

"Missed" cases have not been demonstrated to be a real factor in maintaining the prevalence of diphtheria or scarlet fever.

Daily supervision of contacts in diphtheria cases and the immediate administration of antitoxin on the first appearance of symptoms would be likely to prove an effective means of prevention, but the routine prophylactic injection of antitoxin for diphtheria contacts cannot be recommended.—George F. Buchan, *Pub. Health*, Nov., 1925.

Treatment of Scarlet Fever with Antitoxin—In judging the therapeutic effect of scarlatinal antitoxin on the course of this disease, it must be borne in mind that the symptoms in an individual case are due in part to the specific toxemia of the disease, and in part to septic complications. Observations were made on 57 cases of uncomplicated scarlet fever, 48 cases with septic complications and 7 cases of post-scarlatinal sepsis that were treated with Dochez's unconcentrated antitoxin by intramuscular injection. The 57 uncomplicated cases were cured within 12 to 36 hours, irrespective of the severity of the disease at the time of treatment; however, 2 subsequently developed a non-suppurative cervical adenitis, 1 otitis media, 1 a transient fibrinous pleurisy, and 1 an acute nephritis, but all recovered satisfactorily.

Of the 48 complicated cases all but one were promptly and permanently cured of the specific toxemic phase of scarlet fever as shown by recession of the symptoms characteristic of uncomplicated scarlet fever. The septic complications that were not immediately cured subsided more or less rapidly, depending upon their nature, duration and severity.

No demonstrable benefit resulted from the administration of antitoxin to the 7 cases of post-scarlatinal sepsis included in the study.

An extremely interesting and valuable observation made in the course of this study is on the relation of the time of treatment to therapeutic results. Of 66 cases that were

treated on or before the third day of the disease, 27.3 per cent were severe or extremely severe and only 33.3 per cent were complicated. Of the 36 cases that were treated from the fourth to the seventh day of the disease, 55.6 per cent were severe or extremely severe and 63.9 per cent were complicated. It is apparent, therefore, that the septic phase of scarlet fever as compared with the toxic phase steadily increases as the disease progresses. Since the therapeutic action of antitoxin appears to consist largely in its ability to cure the specific toxemia and since it is not always possible to predict at the onset what the course of the disease will be, the best results will be obtained only when antitoxin is given early in the disease before the septic phase has assumed dominance. In other words, antitoxin should be given in all cases as soon as the diagnosis is made, and in cases with septic complications already present when the patient is first seen, antitoxin should likewise be given at once, provided the rash is still present. Little or no benefit may be expected in cases of post-scarlatinal sepsis after the rash has disappeared.

The amount of anti-scarlatinal serum required for the permanent neutralization of toxin and causing an excess of antitoxin in the blood of the patient will vary with the size of the patient, the severity of the disease, and the antitoxin content of the serum used. "It is believed that satisfactory therapeutic results will be obtained only when an antitoxin sufficiently strong to neutralize at least 10,000 skin test doses of toxin per c.c. is employed. With an antitoxin of this strength the following intramuscular dosage is recommended:

	Mild and Moderate	Severe	Extremely Severe
Children...	30 to 40 c.c.	40 to 60 c.c.	80 c.c.
Adults....	40 c.c.	60 to 80 c.c.	80 to 120 c.c.

1 c.c. is equivalent to 100 units.

—Francis G. Blake and James D. Trask, *Boston M. & S. J.*, Oct. 8, 1925.

Prevention of Rickets—In order to impress upon parents the importance of preventing rickets, the Public Health Department of Paisley, England, has prepared a card of instructions which the visiting nurses leave on their first visit to houses after a baby arrives. A similar practice might well be adopted elsewhere because of the undoubtedly great number of cases of rickets developed without manifest clinical symptoms and also because the recommendations for the prevention of rickets, if followed out, are conducive otherwise to the promotion of health. The material distributed at Paisley is as follows:

Rickets

A Disabling Disease of Childhood: How it is caused and How it can be prevented

Causes:

1. Errors in diet, *e.g.*, too much starchy food, saps, tea biscuits, etc.
2. Not enough of cow's milk, eggs, meat, butter
3. Too little fresh air and sunshine
4. Prolongation of breast feeding after the 10th month

Early signs may be looked for from the 9th to the 12th month. These are:

1. Crying when handled, as the bones are tender to the touch
2. Restlessness at night, and rolling of head from side to side
3. Excessive sweating of head and forehead, especially during sleep
4. Delay in cutting teeth

Late signs:

1. Walking delayed beyond 1st year
2. Bow-legs or knock-knees appear when child begins to walk
3. Thickening of bones at wrists, together with deformity of chest
4. Forehead bulges forward, and opening in skull is larger than it should be
5. Bronchitis, pneumonia and convulsions are common because of child's lowered resistance to disease

Prevention:

1. Wean the baby not later than the 10th month, thereafter give pure cow's milk, meat gravy, fresh eggs, oat-flour porridge, etc.
2. Give bottle-fed babies no saps or tea biscuits until eight months old
3. Take baby out each fine day and let him have as much sunshine as possible. Avoid close overcrowded places, *e.g.*, picture houses
4. Keep windows open night and day
5. If early signs appear, consult your own doctor, or apply to the nearest child welfare clinic.

It is unfortunate that these otherwise excellent recommendations do not include advice with regard to the administration of cod-liver oil so potent for the prevention of rickets.—*Med. Off.*, Oct. 17, 1925.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN *

Reprints for Distribution—Reprints of some issues of this department of the JOURNAL are available for distribution by national, state and local departments and volunteer organizations. They will be supplied without cost and can be enclosed with letters without increasing the postage. In sending the reprints you pass on some ideas which may interest some of the health agencies, and inform the recipients about this department of the JOURNAL.

A Contest for Reducing Accidents—"*The Indianapolis Times* for several days played up at the top of page 1 suggestions made by readers submitted for a $50 prize for the best answer to the question: 'How would you solve the traffic problem in Indianapolis so as to reduce the number of fatalities and other accidents?'"—*Editor and Publisher*, Oct. 17, 1925. An editor may be glad to have this idea brought to his attention. Or the prize suggestion plan may be used in arousing public interest in some other type of health emergency.

Dairymen's Creeds—"The Creed of a Careful Producer of Milk" and "The Creed of a Careless Producer of Milk," prepared by the Department of Dairy Industry of the New York State College of Agriculture, might be printed as mailing cards by a state or a large city department or other health agency.—*Health News*, N. Y. State Department of Health, Albany, Nov. 30, 1925.

Human Treasure Hunt—"*The Brooklyn Eagle* is combining reader interest and circulation building in a Treasure Hunt contest to find the most valuable human treasures in its suburban territory. Any person may nominate as a 'treasure' anyone who has served the community, done a courageous or kindly act of social value. Persons nominating those finally judged as the ten 'human treasures' are given $25 each as prizes by the paper."—*Editor and Publisher*, Oct. 31, 1925. How about a state-wide treasure hunt for good health deeds by individuals, clubs or communities?

A Dialogue Report—To bring a new project before an annual meeting, or some other meeting, have two men or women come before the audience. One may be a board member who is anxious to interest and convince the other who is skeptical or at least uninformed. The latter may simply ask questions, possibly including some of the "fool" type. Or he may raise doubts and difficulties. Answering questions and meeting the doubts will be more effective than a formal report.

For the Good of All—The improvement of the postal service is of concern to everyone. Much can be done to help by those who use the mails. Having your street address on letterheads and wherever it will be used in addressing envelopes will facilitate the early delivery of all mail—and the accurate delivery of your mail. A street *number* is important. A street corner is *not* sufficient. If you are located on a street corner could you add to letterheads something like this: "Entrance 7411 Main Street," or, "Mail Address 7411 Main Street"? If you are skeptical about these points ask the Post Office Department at Washington or your postmaster.

"Have You Rung the Bell?"—This is the query put to members of the Advertising Club of New York. You ring the bell in the lobby of the club house when you bring in a new member during the current campaign. An idea you may be able to adapt to some campaign.

Is This an Opportunity for Coöperation with the Newspaper?—This suggestion to newspaper publishers appeared in *Editor and Publisher*, Dec. 5, 1925: "Dozens of columns of good newspaper space is taken daily by doctors, health specialists and others to tell the people to eat more vegetables, fruits and 'roughage' to keep the body in good condition. Is the business department taking advantage of

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York City.

this propaganda to get fruit and vegetable stores to push their products to the fore? Some of these quotations would make good copy for an advertisement of a grocery store pushing its green vegetable line, etc."

How about offering your local editor cooperation in making up a weekly page of practical health material—original and clipped—your copy to occupy the center of the page, surrounded by advertisements of foods, health books, exercise and recreation equipment, open-air sleeping conveniences, etc., etc. There should be a working arrangement to guard against the possibility of definitely objectionable advertisements.

Whether or not the page should be credited to the department or health organization would be a matter for careful consideration, with recognition of local conditions for or against such public credit.

What do you think of the idea? If the decision is favorable some suggestions of features to arouse interest in the page can be supplied.

Preëlection Publicity—The Canadian Social Hygiene Council, 40 Elm St., Toronto, supported a Dominion health program with a folder and a series of letters addressed to parliamentary candidates and lists of prominent citizens, and mailed a press release to all daily newspapers.

A Publicity Duet—You have an idea or some information about children's work you wish to get before a campaign luncheon or an annual meeting. Have the statements memorized by two or more children who will recite them in unison.

Now is the Time—What topic do you wish discussed, or what question answered at Buffalo next October? Please tell the secretary of the section.

For Members Only—The first bulletin to Section members was mailed last week. If you wish to get on the Section mailing list tell the secretary that you wish to be one of us.

Forty-four and Four More—Since the St. Louis meeting four registrations in the Education and Publicity Section have been added to the 44 who were accepted recently by the Section Council. A.P.H.A. members and fellows interested in this section are cordially invited to register for affiliation. Address the secretary.

Have You Used Advertising Space in Newspapers?—Please send copies of advertisements, large or small, you or other health agencies have ever used.

Have you made use of "want ads" or small "classified advertisements"?

"Have Your Doctor Examine You at Least Once a Year"—But suppose "you" have no doctor. Will this widely distributed suggestion help or hinder? Will "you" take it as a friendly suggestion, or as an effort to "make business for the doctors"? Put this question to groups of people and see how they feel about it.

Wanted!—A device for displaying a succession of placards for use in a store window is desired. Please offer suggestions. If you have used such a device, kindly report your experience. Is it worth while? Where can it be used to advantage?

Glean from Recent Campaign Plans—More or less elaborate plan books and various forms of publicity material were issued from the headquarters of campaigns which have been announced in "Dates Ahead" in various 1925 issues of the JOURNAL. It may be worth while to request copies of this back material. Better enclose at least 10 cents for postage. In a few cases a small fee for the plan book was mentioned in the JOURNAL.

Red Grange as a Health Teacher—The Golden Rule Sunday radio talk by Red Grange on the night of December 6 is something most boys and young men will read—and it was largely an appeal for simple living. While the edition lasts copies for distribution will be supplied free by the Near East Relief, 151 Fifth Ave., New York, N. Y.

"Scissor Pictures" for Illustrations—If only for the "scissor pictures" illustrating "What Should a City Do?" *The Survey*, Nov. 1, 1925 (112 East 19th Street, New York, N. Y.), is a bargain at 30 cents. They illustrate the frivolous uses of silhouettes in health publicity. Exhibits and printed matter may well be enriched by some form of the silhouette. "Silhouette Making the Kodak Way," a free pamphlet issued by the Eastman Kodak

Co., Rochester, tells how to produce silhouettes photographically. Kindergarten teachers can scissor them for you.

DATES AHEAD

Feb. 7—Charles Dickens' birthday. An evening with selections on social problems from Dickens' works read informally.

Feb. 8–15—Boy Scout Week—Boy Scouts of America, 200 Fifth Ave., New York, N. Y. Another chance for coöperative publicity.

Feb. 11—Daniel Boone's birthday. Any possibility for some health lessons from his life?

Feb. 12—Lincoln's birthday. Close up shop and foregather outdoors, with reading of the Gettysburg speech at luncheon time.

Feb. 14—St. Valentine's Day. How about a Health Valentine stunt?

Feb. 14—Race Relations Sunday — Federal Council of Churches, 105 East 22d St., New York, N. Y. Seek for what this day may offer in your work.

Feb. 17—Ash Wednesday.

Feb. 21–27—Better American Speech Week—Mrs. Katharine Knowles Robbins, Committee of Better American Speech, 5537 Ingleside Ave., Chicago, Ill. Have a staff session on the words we misuse. Each one present may turn in a memorandum on what he does not like in the word usage of other members of the staff. Then have the memoranda read and discussed. Possibly the group may be asked to guess the identity of each wrongdoer. Also try this in an informal gathering of social workers in your city.

Feb. 22—Washington's birthday.

Feb. 27—Longfellow's birthday.

SOME RECENT BOOKS *

Amateur Photographer's Handbook, by A. Frederick Collins. 1925. Thomas Y. Crowell Co., 387 Fourth Ave., New York, N. Y. $2.50.

Blackboard Sketching, by Frederick Whitney. 1925. Milton Bradley Company, Springfield, Mass.

Conferences, Committees, Conventions and How to Run Them, by Edward Eyre Hunt. 1925. Harper & Bros., 49 East 33rd St., New York, N. Y. $2.50.

Crowell's Handbook for Readers and Writers, edited by Henrietta Gerwig. 1925. Thomas Y. Crowell Co., 387 Fourth Ave., New York, N. Y. $3.50.

Funds and Friends, by Tolman Lee. 1925. Woman's Press, 600 Lexington Ave., New York, N. Y.

Health Speaker's Handbook, by Iago Galdston, M.D. Revised 1925. National Tuberculosis Association, 370 Seventh Ave., New York, N. Y. 50 cents.

Influencing Human Behavior, by H. A. Overstreet. 1925. People's Institute Publishing Co., Inc., 70 Fifth Ave., New York, N. Y. $3.00.

Manual of Style (A), written by University of Chicago Press. 1925. University of Chicago Press, Chicago, Ill. $3.00.

Newspaper Worker (The), by James Philip MacCarthy. 1925. Frank-Maurice, Inc., 15 West 37th St., New York, N. Y. $2.50.

Psychology in Advertising, by Albert T. Poffenberger. 1925. A. W. Shaw Co., 250 Park Ave., New York, N. Y. $6.00.

Publicity: Some of the Things It Is and Is Not, by Ivy L. Lee. 1925. Industries Publishing Co., 80 Lafayette St., New York, N. Y. $1.00.

METHODS AND MATERIALS

Directories of Social Agencies. Bulletin of Russell Sage Foundation Library. August, 1925. Russell Sage Foundation, 130 East 22nd St., N. Y. 20 cents. A list of published lists of national, state and local agencies of many kinds.

Electrical Advertising, by C. A. Atherton. Engineering Department, National Lamp Works, Nela Park, Cleveland. Free. Valuable information for the person who wishes any lighting effect, from the simplest sign before the office door to the largest of outdoor displays.

Health: Diseases, Drugs and Sanitation. Superintendent of Documents, Washington. Free. A list of government publications for sale. Free. Also: Farmers' Bulletins; Foods and Cooking; Animal Industry. These are current revised editions.

Health Education Procedure, by Kathleen W. Wooten, is announced for early publication by the National Tuberculosis Association.

(A) Health Play Contest for High Schools, by National Tuberculosis Association. Secure free of any state tuberculosis association. Includes "Fundamental Technical Principles," bibliography, and a list of state tuberculosis associations.

* The Book Service of the American Public Health Association, 370 Seventh Ave., New York, N. Y., can secure these books and others for you most conveniently.

Helps for the Amateur Actors: A Selected Bibliography, by Hazel Merry. *Publishers' Weekly*, 62 West 45th St., N. Y. Oct. 10, 1925. 15 cents. Lists many kinds of helps in production of plays and other entertainments. May be examined at public library or book store.

How to Make Crepe Paper Costumes. Dennison Manufacturing Company, Framingham, Mass. 10 cents.

How to Take News Pictures, by Dwight S. Anderson. *Bulletin*, National Tuberculosis Association, 370 Seventh Ave., New York, N. Y. Nov., 1925. Free. A wealth of information and suggestion on getting and using photographs.

Publications Available September, 1925. Bureau of Education, Washington. Free. Includes Health Education Series, Physical Education Series, School Health Studies, etc.

(The) Selling Points of Case Work, by Clare M. Tousley. *The Family*, 130 East 22nd St., New York, N. Y. March–June, Nov., 1925. Stimulating and practically helpful. Reprints 5 cents each.

EDUCATIONAL PAMPHLETS

Sleeping and Sitting in the Open Air. A revised edition of this pamphlet has been issued by the National Tuberculosis Association, and is available through state and local tuberculosis associations.

Strong Hearts. Metropolitan Life Insurance Co., New York. Free. Popular pamphlet on heart disease. Also: Feeding Your Baby; Common Colds; Artificial Respiration; Diabetes.

EXHIBITS

Eleven series of "exhibit panels," including Nursing Service, Public Health Nursing, First Aid, Home Hygiene, Life Saving, Nutrition Service, etc. American Red Cross, Washington, D. C.

FILM SLIDES

"History of the Christmas Seal." For all the three film slide projectors. National Tuberculosis Association, 370 Seventh Ave., New York.

MOTION PICTURES

"A Fortunate Accident," American Society for the Control of Cancer, 370 Seventh Ave., New York.

"The Hungry Dragon," for New York Tuberculosis Association. By Carlyle Ellis, 71 West 23rd St., New York, N. Y. Acted by marionettes. For children.

"Out of the Shadows," Department of Agriculture, Washington. Health danger of tuberculous cattle.

"A Two-Family Stork," for New York State Department of Health. By Carlyle Ellis. Animated cartoons. The importance of prenatal care.

A Prize Contest in Typography—"Newspaper Advertising Typography," issued by the *New York Times*, reproduces 408 specimens out of more than 600 submitted in a contest sponsored by the *Times*. The array illustrates the amazing variety possible in setting a small number of words, about 67 in this case. This comment appeared in *Inland Printer*, Chicago, July, 1925: "It is especially interesting to observe that 4 of the 6 winning specimens were set in Caslon Old Style, 1 in Cloister and 1 was hand-lettered. In taking cognizance of this, one is reminded of the fastidious epicurean who dines at the Waldorf or the Blackstone. He is confronted by a menu that has listed on it every imaginable delicacy—everything that's good to eat, from the rarest imported viands down to the ordinary domestic fare. The diner studies the bill of fare from top to bottom, carefully deliberates, and then as a rule asks the waiter to bring him an order of roast beef! With all the world of type competing, Caslon again shows itself to be the topnotch bread-and-butter type, combining beauty and utility." —Free. Write promptly to Advertising Typography, Business Office, *New York Times*.

Vital Statistics for Newspaper Readers—"How much is the life of a Baltimore baby worth? When you make up your mind, multiply the figure by eight thousand. And mark the sum down to the credit of increased medical knowledge and better hospital facilities for children during the single year 1924.

"Back in 1870 the city had a population of 267,000. In that year almost 4,000 children under 10 died from one disease or another.

"Fifty years later—in 1920—the census set the number of people in Baltimore at 734,000. And in 1920 only 2,845 children under 10 died in the city.

"Population nearly tripled in the half century. But the number of little children who died during the last year of that period was actually more than one-third less than during the first."

Thus the *Baltimore Sun*, Sept. 14, 1925, introduces a story about the children's department of Johns Hopkins Hospital.

LAW AND LEGISLATION

JAMES A. TOBEY, LL.B.

Public Health and the U. S. Supreme Court—Recognition of the importance of public health in the affairs of the nation is indicated by the fact that many leading magazines in fields other than sanitary science are willing or eager to publish worth-while material on this subject. Thus, the November, 1925, issue of the *American Bar Association Journal* contains a liberally annotated 4-page article on public health and the United States Supreme Court. This paper reviews concisely some one hundred decisions relating directly to national vitality which have been delivered by the highest tribunal of this country during the last century. It is interesting to note that over one hundred years ago, John Marshall, greatest of our chief justices, spoke of "the acknowledged power of a state to provide for the health of its citizens."

These legal decisions relating to public health have dealt with the operation of the police power, its extent and limitations; with quarantine, maritime and interstate; with controversies between states on sanitary matters; with the purity and adulteration of foods; with hours of labor and other industrial conditions affecting health; and with various miscellaneous matters. As far as is known, this is the only existing review of the opinions of the United States Supreme Court on public health, though there is also some discussion of them in *Public Health Law*. The article in the *American Bar Association Journal* is one chapter of a book on the national government and public health, which will be issued by the Institute for Government Research of Washington, D. C., in the immediate future.

The American Bar Association is located at 38 South Dearborn Street, Chicago, Ill. Its Journal is to the legal profession what the AMERICAN JOURNAL OF PUBLIC HEALTH is to sanitarians and the *Journal of the American Medical Association* is to physicians.

Federal Health Activities—Articles on the correlation of federal health activities have appeared in the *Journal of the American Medical Association* for November 7, 1925, *Science* for November 20, 1925, and the *National Municipal Review* for December, 1925. *The Public Health Nurse* for June, 1925, had an article on this topic, and others are to be printed elsewhere. The subject is a pertinent and significant one, and the more it is discussed the better.

One step toward the coördination of federal health work, upon which there is practically unanimous agreement, would be the transfer of the collection of national vital statistics to the Public Health Service. No more convincing argument for such a procedure has been given anywhere than in the annual report for 1925 of the Director of the Census, who now has charge of this activity. On page 11 of his report he says, speaking of vital statistics: "Such figures serve as the foundation of public health work. They indicate to the public health officer the most promising direction for the expenditure of funds appropriated for such work, and they clearly show what degrees of success have attended the campaigns for better health in former years." Since vital statistics are admittedly the bookkeeping of public health, they should be collected, compiled, and analyzed by a health agency. In the federal government, the principal health bureau is the Public Health Service. This bureau, as well as the census office, has legal authority to collect national vital statistics; but it has never received an appropriation for the purpose. The present appropriation might well be allotted to the Public Health Service and the Division of Vital Statistics transferred to it. This would be logical and a step in advance.

The annual report of the Surgeon General of the Public Health Service for the fiscal year 1925 was released for publication on December 13, 1925. This will undoubtedly be reviewed later by Professor Hiscock.

A special investigating committee appointed by the Director of the United States Veterans' Bureau has absolved St. Elizabeth's, the government hospital for the insane, from charges of maltreatment of veterans. The committee

conceded, however, that many improvements are needed, and that overcrowding is serious. The fault goes back to Congress, of course, because proper and adequate facilities cannot be provided without the financial wherewithal for the purpose. In the last issue of the JOURNAL, page 1140, accusations of the grand jury of the District of Columbia against the hospital were mentioned.

Transportation and Use of Chlorine—The Interstate Commerce Commission on November 9, 1925, issued a decision which is of some interest to sanitarians. This was an order requiring cancellation of certain schedules for the shipment of chlorine gas and other compressed gases in interstate commerce. Most chlorine is now transported in what is known as multiple-unit cars, consisting of 15 tanks holding 2,000 pounds each. A tank car is entitled to lower shipping rates than is freight which is removable from a car. The carrier attempted to have these multiple-unit cars classed as other than tank cars, so that higher rates could be charged, though it costs the railroad no more to transport them than the usual type of tank car. The interest of sanitarians in this matter is shown by the fact that about 6,000 cities and towns use chlorine gas for chlorination of drinking water, sewage, swimming pools, and other sanitary purposes. The ruling of the commission is apparently satisfactory from the standpoint of public health, though it is an economic and not a sanitary one.

Another case involving chlorine has recently been tried in New York in the Federal District Court for the Eastern District of the state. This was an action brought by the Wallace & Tiernan Company as licensee and the Electro Bleaching Gas Company as owner against the Paradon Engineering Company for infringement of a patent covering the solution feed process of chlorination of water and sewage. The court held that the patent had been infringed and issued an injunction against its use by the Paradon concern, and also awarded damages to the owners and licensees of the patent.

Georgia Vital Statistics Law Unconstitutional—Provision in a Georgia law delegating to a county the right to levy taxes for the purpose of paying fees of local registrars of vital statistics has been held unconstitutional by the Supreme Court of Georgia in Smith v. State, 129 S. E. 542. The constitution of the state declares that county taxes can be authorized, among other things, "to provide for necessary sanitation," and the question thus arose as to whether the collection of vital statistics could be included as necessary sanitation. The court decided that it could not, saying: "We gravely doubt whether these statistics offer any help in discovering methods of preventing disease." The court apparently believed that the only use of these data was for medical research, as this phase of the use of vital statistics is frequently referred to. The opinion states, for instance, "Such data might help scientists, engaged in research work, to devise and develop means and methods of sanitation, but such information does not in the slightest degree enable the county authorities to provide necessary sanitation. What the county authorities need in providing sanitation is knowledge of known, tried, and approved means and methods of sanitation."

Vital statistics are, of course, among the necessary equipment of health authorities in coping with disease and promoting health. It is unfortunate that this fact could not have been so effectively presented to this court that a different result would have been reached. The court relied on the *New Standard Dictionary* definition of sanitation, which says it is "the devising and applying of measures for preserving and promoting public health; . . ." This definition certainly would include vital statistics.

This court decision is, in the opinion of the writer, erroneous, but the fault does not fall entirely upon the court. It is the duty of the judiciary to apply and interpret the written law in accordance with the apparent intention of the legislature or of the people. The original defect is in the wording of the constitution, "To provide for necessary sanitation." This is a phrase which is none too clear, although sanitarians may think they know what it means. Constitutions are, moreover, for all the people, and should be so clearly expressed that their meaning and intent is comprehensible beyond doubt.

This case was decided on June 22, 1925, and a rehearing was denied on September 22, 1925. The case was reported on November 7, 1925, in the advance sheets of the *Southeastern Reporter*. The attention of the associate editor was called to this case some time ago by the statistician of a life insurance company. Since such decisions are of general interest to sanitarians, the associate editor would be grateful

if state and local health authorities, or other sanitarians, who have knowledge of interesting court actions pertaining to public health would keep him informed of such actions in order that prompt reports of these matters may be made in these columns.

Michigan Sterilization Law Upheld—Every state law providing for the sterilization of mental defectives tested in the courts up to 1925 has been held unconstitutional. In the book *Public Health Law* the writer has stated that this fact was due not to any lack of justification on sociological grounds for such laws, but because the laws themselves were improperly drafted. This point of view has been sustained by a recent Michigan decision, Smith v. Command, 204 N. W. 140, which has held constitutional all but one section of the 1923 sterilization law of that state. This decision is as broad in its conception of public welfare, as the Georgia opinion, reviewed above, is narrow; though 3 of the 8 justices of the Michigan Supreme Court dissented from the opinion.

The law authorizes the sterilization of "mental defectives," a term which includes idiots, imbeciles, and the feebleminded, but not the insane, when one of this class is adjudged mentally defective by a court of competent jurisdiction after hearing evidence, including the testimony of 3 physicians appointed by the court to examine the individual. If it is found that the individual manifests sexual inclinations which would make it probable that he would procreate children, unless prevented, and that there is no probability that the individual's condition will improve or his children not have the inherited tendency, the sterilization may be performed.

This provision was upheld as a valid exercise of the police power of the state. It is not affected by the constitutional provision against cruel and unusual punishment, and the methods to be used are not cruel or oppressive. It does not deny equal protection of the laws, nor does it violate the requirement of due process of law.

The section of the law authorizing the sterilization of mental defectives unable to support any children they might have, and whose children would probably become public charges, was held void as not being applicable to all persons of the same class.

This decision is a notable one in the field of public welfare, and, of course, has an important bearing on the public health.

CONFERENCES

January 18–20, National Drainage Congress, Oklahoma City, Oklahoma.

January 20–22, American Society of Civil Engineers, New York, N. Y.

February 1, American Heart Association, Inc., New York, N. Y.

February 15–17, Federation of State Medical Boards of United States, Chicago, Ill.

February 15–17, Council on Medical Education and Hospitals of the American Medical Association, Chicago, Ill.

February 18–20, National Vocational Guidance Association, Washington, D. C.

February 21–25, The Department of Superintendence of the National Education Association of the United States, Washington, D. C.

February 22–25, National Association of Deans of Women, Washington, D. C.

March 15, Wyoming Public Health Association, Cheyenne, Wyoming.

April 2–3, American Association of Pathologists and Bacteriologists, Albany, N. Y.

April 15–16, Western Physiotherapy Association, Kansas City, Mo.

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